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Telecommunications Commission

Conseil de la radiodiffusion et des  
télécommunications canadiennes

***Navigating Convergence: Charting Canadian Communications  
Change and Regulatory Implications***

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## 1.0 OVERVIEW

The spheres of telecommunications and broadcasting are rapidly evolving and converging into a single world of communication. Cycles of innovation, adoption and further innovation with respect to services, applications and infrastructure can now be measured in months rather than years. Regulators throughout the world are challenged to keep pace. Where such fundamental national considerations as cultural expression and a multi-billion dollar communications industry are at stake, the challenges and opportunities in reacting both quickly and with a measured response to technological change are critical to consider.

This document, *Navigating Convergence: Charting Canadian Communications Change and Regulatory Implications*, examines telecommunications, broadcasting and the evolving converged world of communications to accomplish several related objectives, namely:

- i. to compile cultural, economic and technological trends toward convergence, to reflect the pace at which change is occurring and to present the resulting challenges and opportunities for traditional regulatory models;
- ii. to outline the high-level structural changes and regulatory considerations that will need to be navigated between now and 2014; and
- iii. to provide a specific, but not exhaustive, list of mid-term issues that are expected to require regulatory treatment within the next five years.

The purpose of setting out these mid-term regulatory considerations resulting from technological change is to demonstrate the inter-linkages between these issues and the current regulatory agenda and to stimulate discussion and consideration of a coherent approach to regulation that iteratively evolves a framework that reflects new realities.

This document presents a comprehensive look at the most important technological trends and evidence of convergence and their effects on business and consumer behaviour to demonstrate that long-term outcomes will be dependent in a large part on decisions that are currently being made. Consideration of how technological, consumer and business trends could evolve in the mid-term will result in better decision-making in the short-term.

Perhaps more fundamentally, the document identifies a range of potential challenges and opportunities for the current regulatory framework. In some cases, previous tools may no longer be sufficient to ensure that the policy objectives are achieved. In others, the Commission<sup>1</sup> may wish to consider new approaches that encourage Canadian entities to exploit new opportunities.

Finally, the document examines several focus issues that will likely require attention in the mid-term. The goal in presenting these issues is to provide an initial background information document that can be enhanced as new information becomes available and to give the Commission a head start in the consideration of the issues.

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<sup>1</sup> The CRTC is generally referred to as the Commission in this report.

## 2.0 EXECUTIVE SUMMARY

The evidence of technological change and its effects on consumer and business behaviour set out in the pages that follow, clearly shows that consumers, innovative technology vendors and communications services providers are leading a charge in favour of choice, convenience, immediacy and the ubiquity of communications that is transforming the communications landscape.<sup>2</sup>

Key to the transformation has been the digitization of information and the packaging of that data so that it can be delivered by digital networks. Digitized voice, data and audio and audio-visual programming may all be distributed on networks based on various physical media, including coaxial cable, copper and fibre, as well as wirelessly across multiple spectrum bands using a variety of technologies. Digitization has enabled services that were previously separate, such as voice, data, audio and video, to be distributed over the same network, to share resources and to interact with each other—this is referred to as convergence.

Digitization and convergence are fundamental drivers of systemic changes within and without the regulated broadcasting and telecommunications systems. In studying the trends, two primary themes are evident—fragmentation and consolidation. Multiple sources of substitutable products, services and applications delivered by domestic and international providers have fragmented the market. Regulated players and new unregulated entrants are gaining revenue while only the regulated players have to bear the responsibility of service and social obligations (e.g. funding regimes). On the access side, horizontal and vertical integration in the communications industry is occurring, in part, as a response to fragmentation. Integration has the potential to reduce competition and the diversity of voices.

Convergence has increased the value of existing distribution networks manyfold by enabling horizontal expansion and integration by facilities-based providers. As a result, companies throughout the world have developed strategies to compete across the spectrum of fixed voice and data communications and in the provision of Internet, television and wireless voice and data services. In Canada, the potential for duopoly has resulted in the creation of a sophisticated regulatory regime to give new entrants and competitors access to facilities. This approach requires further exploration with respect to the next generation of facilities that are on the horizon, which are capable of delivering higher quantities of data at faster rates and may require significant capital expenditure.

At the same time, the elimination of monopolies in most residential and business services has been accompanied by the removal of the need for regulation to manage most facets of service. Price caps and floors, rate regulation and injunctions against many marketing practices in both telecommunications and broadcasting have been lifted as companies in either sphere extend their activities into the other. Where competition does not, and may never exist (particularly in rural Canada), traditional approaches continue to be implemented but may require revisiting.

Consumer protection is likely to become a more important consideration for the Commission in the mid-term as a handful of providers establish themselves as the primary gatekeepers to all manner of communications services using digital technologies. Spam, fraud, denial of service attacks and other threats to network security are amplified in a new environment in which “pipes” are multi-purpose and relied upon to deliver critical services, communications, information, business transactions and entertainment. Consumer protections (e.g. privacy and service standards) are in an early stage of development for the converged environment and will become more critical as Canadians turn to new technologies for communications, entertainment and information.

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<sup>2</sup> It should be noted that this paper is principally focussed on trends and services relevant to residential consumers rather than on the enterprise market.

Programming choices that have traditionally been controlled by incumbent, licensed broadcasters and delivered via gatekept satellite and cable infrastructures are now complemented by Internet-delivered content accessed by personal computers, a new generation of set-top boxes and mobile devices. Barriers to the creation and dissemination of content by non-traditional players have fallen dramatically: hosting has become more affordable and the technical capacity to create very high quality content has become widely available. In the unregulated Internet environment, few barriers prevent Canadians from accessing content from global sources in situations in which that programming is not controlled exclusively by a Canadian intermediary.

As the consumer shift from time spent engaged in conventional television viewing and radio listening to greater on-line consumption becomes apparent, advertising dollars, if not subscription revenues, are following. The best-researched projections indicate a fast-growing Internet advertising segment, which may, at some unspecified point in time, become a direct competitor to traditional broadcast outlets. Some of this advertising may be diverted to websites containing non-professional content with the potential to erode the traditional sector's revenue base.

At the same time, broadcasters and distributors are making forays into new Internet and mobile-delivered content, mitigating against the day when audiences are no longer guaranteed by traditional walled gardens and the control of spectrum.

Industry players, old and new, are responding to demands for anywhere, anytime content delivery with time-shifting models and an increasing emphasis on mobile delivery (or place-shifting). New wireless networks are being deployed that deliver very high-speed Internet to much of the population. Even as choice of content expands exponentially, next generation networks that require very large capital expenditures seem poised to continue to be controlled by the current facilities-based access providers. The shape of a competitive environment for telecommunications access provision seems largely dependent on whether new wireless entrants can establish themselves as viable competitors or whether the ILECs and BDUs will exercise market power in their traditional regions.

The protection of local, regional, linguistic and cultural reflection will remain a critical challenge in this emerging digital environment, as will enabling all segments of the Canadian population across both economic and geographic lines to share in the new possibilities it presents. Both imperatives may require ongoing intervention to overcome the market's tendencies not to meet certain policy objectives. At the same time, new technologies have led to the flourishing creation of new services and content without regulatory intervention. New media and broadcasters use thereof is providing more Canadians with greater access to a more diverse array—local, regional, linguistic and cultural—of Canadian content than at any time. It is worth noting that many of the *Broadcasting Act's* objectives will be achieved, in part, outside of the regulated sector.

These considerations create both specific challenges and opportunities for regulatory approaches, as well as having higher-level implications. Much of the legislation crafted in the late 1980s to govern the telecommunications and broadcasting industries remains pertinent today, but, as the dividing lines between entities blur, new considerations are emerging. On the one hand, it has for instance become clear that the operation of telecommunications facilities has cultural ramifications. On the other hand, the provision of programming has transcended one-way broadcasting models and can no longer be technologically constrained to geographically-based providers. Initiatives aimed at the preservation of Canadian programming and the protection of consumers may be increasingly required in the programming sphere.

### 3.0 TRENDS

1. The following sections explore some of the important trends shaping the communications landscape: fragmentation in content/applications source and type and the corporate consolidation of facilities-based access providers.
2. The first group of trends shows that consumers are embracing choice and innovation—new content and applications made possible by both digitization and the multipurposing of formerly discrete networks. This force has been felt most keenly in the television sector in the wake of a proliferation of licensees, but the trends point clearly to adoption of broadcasting content and other services and applications from outside the traditional landscape of regulated entities.
3. The second group of trends, related to consolidation, indicates that traditional and regulated entities are availing themselves of new opportunities through both horizontal and vertical integration. Content with mass appeal and the most common communications tools such as voice telephony and Internet access are increasingly obtained from multiple-service providers that integrate Internet, telephony, wireless and television distribution under one corporate umbrella. Some of these multi-service providers are also significant content producers.
4. The two themes, fragmentation and corporate consolidation, will be extrapolated to logical implications of in a subsequent section, Regulatory Implications.

#### 3.1 *Toward a new conventional/specialty television balance*

5. Technology is changing the broadcasting landscape. Increased capacity on distribution platforms such as cable, DTH, IPTV and others has resulted in continuing audience fragmentation. An increasing variety of video choices will likely exacerbate this trend.
6. A transformative shift in Canadian viewing habits from the conventional system to a crop of new analog and digital specialty, pay and PPV and VOD services has wrought a wholesale change in the television landscape. This shift, demonstrated in Table 1 and Figure 1, has resulted in an increase in available services and contributed to the fragmentation of the Canadian television audience, moving viewing share away from traditional OTA broadcasters to specialty, PPV and VOD services. In fact, pay and specialty stations now account for a larger share of overall tuning than private OTA and CBC stations combined.
7. It should be noted that this shift has moved in lockstep with the introduction of a large number of services on the discretionary tier. In November 2000, the Commission authorized 21 Category 1 services and 262 Category 2 services. Many of these have proven very popular and become entrenched in Canadians' viewing choices.

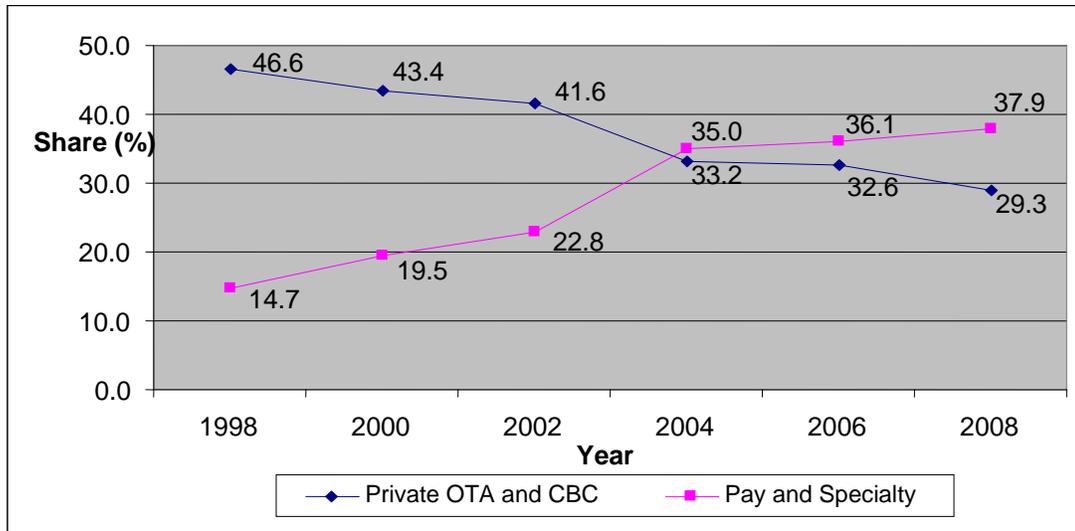
**Table 1. Available television services**

	1998	2008	Diff.
<b>Specialty TV</b> (Analog, Cat. 1, Cat. 2)	37	150	+113
<b>Pay, PPV and VOD</b>	12	54	+42
<b>Total</b>	49	204	+155
Source: CRTC, <i>Broadcasting Performance Monitoring Report 2002</i> , CRTC, <i>Communications Monitoring Report 2009</i>			

8. Fragmentation is particularly apparent in the English-Canadian market. From 1998 to 2008, the overall viewing share of private OTA and CBC stations in English Canada decreased by 17.7%, from 46.6% to 29.3%. Conversely, over the same period, the

overall share of viewing to pay and specialty services increased 23.2%, from 14.7% to 37.9%.<sup>3</sup>

**Figure 1. Canadian viewing share of private OTA and CBC versus pay and specialty services, excluding the Quebec Francophone market**



Source: CRTC, *Communications Monitoring Report 2009*

9. The audience fragmentation issue is further exacerbated by the fact that average weekly viewing for all persons over the age of two has declined 7% since 2002, decreasing from 28.6 hours in 2002 to 26.6 in 2008. Thus, while the number of available stations has increased significantly over the last 10 years, the total viewing pie has remained relatively stagnant.<sup>4</sup>
10. Over time audience fragmentation may lead to declining or stagnant revenues for conventional television, which for nearly 50 years held sway over viewers' broadcasting consumption. According to the CRTC's *Communications Monitoring Report 2009*, private broadcasting revenues—subscription and advertising—have been growing at a healthy rate in the discretionary sector, but are largely stagnant compared with inflation in the conventional system. CBC's revenues, excluding Parliamentary appropriations, are relatively flat.
11. Between 2004 and 2008, advertising revenues for private and CBC OTA stations increased by a modest \$112 million compared to the growth realized by pay, PPV and specialty stations, which saw advertising revenues increase by \$317 million over the same period. As a percentage of advertising revenues, pay, PPV and specialty stations accounted for 30% of total advertising revenues in 2008, up from 24% in 2004, while private OTA and CBC stations saw their portion of overall advertising revenues decrease from 76% in 2004 to 70% in 2008. In 2008, advertising revenues for private conventional services actually declined, from \$2.04 billion to \$2.00 billion, largely due to a reduction in overall national advertising sales.<sup>5</sup>
12. A global credit crisis and ensuing recession have played a clear role in the decline in Canadian television advertising revenues. Automotive manufacturers and dealers, key players in both national and local advertising, have been generally hard-hit by both the credit crisis and the contraction in consumer spending. Wholesale automotive sales fell

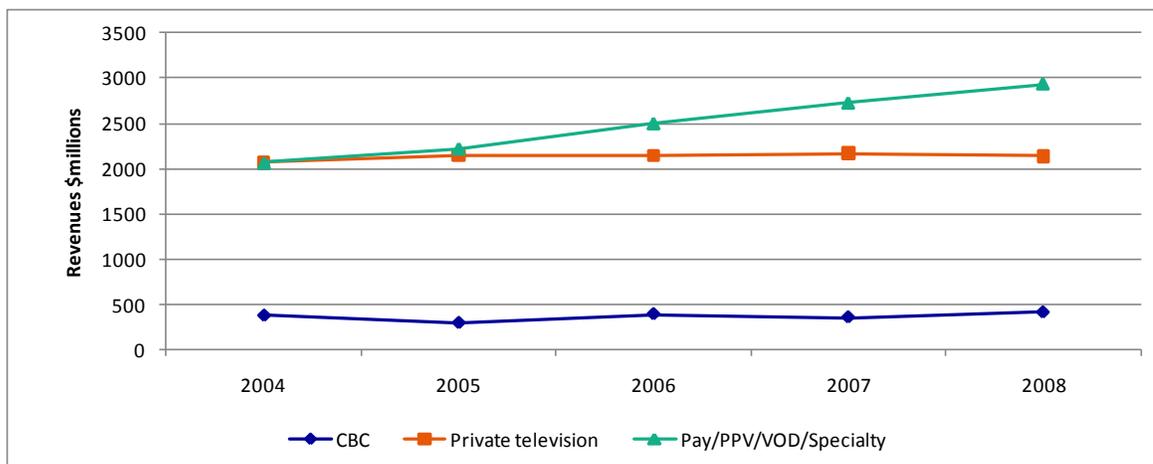
<sup>3</sup> CRTC, *Communications Monitoring Report 2009*.

<sup>4</sup> CRTC, *Communications Monitoring Report 2009*.

<sup>5</sup> CRTC, *Communications Monitoring Report 2009*.

22.9% in January 2009, for example, contributing the lion's share of a 4.2% decline in overall wholesale sales for all goods that month.

**Figure 2. Broadcasting revenues (\$millions)**



Source: CRTC, *Communications Monitoring Report 2009*

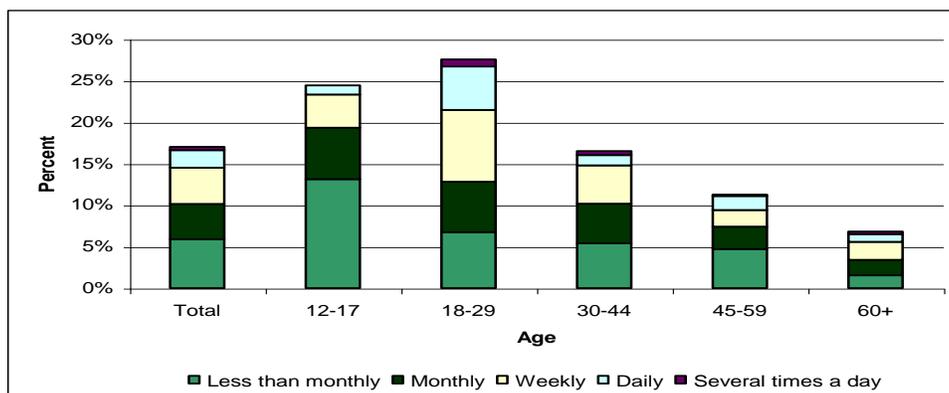
13. While there is likely a fundamental linkage between the contraction in advertising revenue, demonstrated in the Commission's published 2008 financial results for the television sector, and the more general economic malaise that was building through 2008, it must be kept in mind that these results are complete only to the broadcasters' year end of August 31. It is likely that 2009 financial results will demonstrate a further decline over 2008 independent of structural issues that may be experienced in the broadcasting industry specifically. Discerning the effect of fragmentation among multiple video entertainment options on broadcasting advertising revenues will be extremely difficult in the short-term.
14. The movement of audience from traditional broadcasters to the pay, PPV and specialty stations will likely begin to subside given the more modest introduction of new specialty stations since the initial wave following the November 2000 decision and the fact that many of these stations have now reached maturity. This trend is demonstrated by the declining rate of growth in the overall viewing share of specialty stations, possibly signalling that the fragmentation trend brought upon by the introduction of specialty stations to the Canadian marketplace has peaked. Barring the wholesale introduction of multiple new discretionary services with mass appeal or the introduction of mainstream U.S. satellite services, it is likely that within the mid-term the industry will find a new equilibrium not far from the current balance of viewing. A view of this balance in the mid-term, however, will be obscured by the current economic clouds.
15. The absence of clear trends independent of non-broadcasting-specific considerations renders it challenging to develop a view of OTA broadcasting in the mid-term. The Commission is currently dealing with assertions by the major broadcasting groups that the business model for OTA television is unsustainable. As a result, some broadcasters have indicated that they will close some small-market stations which are considered unviable.

### 3.2 Proliferation of advertising choices

16. At the same time, the Internet as a platform for the distribution of broadcasting and other information/entertainment content is becoming a source of competition for Canadian conventional services, though its current role is largely complementary with respect to professional programming.

17. It would be premature to pronounce on the potential for Internet-delivered content to further fragment audiences. Many observers believe that the Internet will prove to be a complementary distribution network to existing platforms, while others indicate that it will eventually become a substitute for cable, IPTV and DTH distribution. What is clear is that the consumption of broadcasting content online has become commonplace, especially among youth. 3G wireless networks have enabled consumers to use wireless devices to consume online broadcasting content such as mobisodes.<sup>6</sup>
18. The effect of an advertising revenue shift to the Internet is more difficult to document, largely because there are no universally accepted measures for audience, traffic and revenue, nor any central aggregation point for that data to provide a macro-economic view.
19. According to the Interactive Advertising Bureau of Canada's most recent *Canadian Media Usage Trends* study published in February 2009, the landscape for advertising and consumption has been profoundly changed by the introduction of the Internet:
  - the Internet stands third behind television and radio in terms of total weekly time spent with all media;
  - the Internet is now the number one medium in terms of percentage share of weekly time spent for both persons aged 18 to 24 (40%) and 25 to 34 (33%) in English Canada. In Quebec, online is now the largest component of time spent with media for persons aged 18 to 24 and the Internet time is "fast-approaching" radio and television time among persons aged 25 to 34;
  - the Internet now reaches more adults each week than either magazines or newspapers; and
  - the Internet is now "neck and neck" with television for weekly reach among persons aged 18-24 nationally.
20. Canadians have consistently ranked among the highest users of online video, as measured by metrics company Comscore. According to the company's data, in January 2009, 21.1 million unique viewers (88% of online Canadians) viewed 3.1 billion videos, or 147.1 each. This compares to 135 videos per viewer in the U.K., 107.5 in Germany, 90 in the France and 87.9 in the U.S.

**Figure 3. Downloading, streaming or watching television on the Internet**

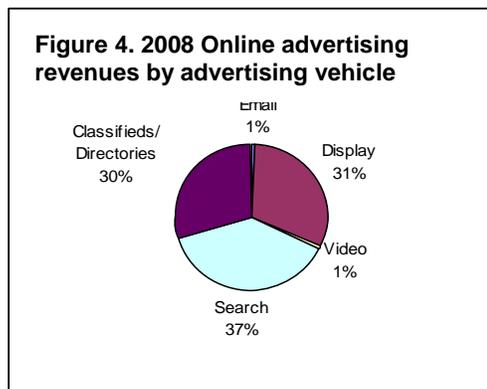


**Question: Please tell me how frequently you use the Internet for the following activities?  
Download, stream or watch television.**

**Source: Charles Zamaria and Fred Fletcher, (Canadian Internet Project), *Canada Online! The Internet, Media and Emerging Technologies: Uses, Attitudes, Trends and International Comparisons*, 2007**

<sup>6</sup> The term 'mobisode' refers to mobile television episodes, often based on current television shows.

21. As a result of this shift, it is possible that at least some advertising revenue that would previously have been spent on traditional broadcast platforms is now shifting to online services. The extent to which this is new revenue or a shift in revenue is difficult to determine given that the majority of advertising dollars flowing into Canadian online vehicles is to classified ads and directories, display advertising such as banners, and search keyword advertising. According to the Interactive Advertising Bureau of Canada, video advertising online represented just 1% of online ad revenues in 2008 (see Figure 4).<sup>7</sup>



Source: Interactive Advertising Bureau of Canada

22. PricewaterhouseCoopers estimates that by 2013 video (and rich media) advertising will represent close to 2% of (wired) Internet advertising in Canada—representing U.S.\$45 million out of a total Internet advertising spend of U.S.\$1.970 billion. This would amount to a 23% CAGR from 2009 to 2013—the fastest, notes PricewaterhouseCoopers, of all online advertising categories for the next several years. This growth is facilitated in part by video streaming of television shows containing video ads, the popularity of video sites and television network Web-video sites.<sup>8</sup>
23. Video advertising is considered by marketers a premium way to influence customers,<sup>9</sup> and the rates now being paid to place video spots on mass-appeal and valuable niche websites are approaching, sometimes exceeding, rates for the traditional television platform. While prime-time television shows currently fetch a U.S.\$25 CPM, some premium websites can charge up to U.S.\$100 CPM, according to a 2008 eMarketer study.<sup>10</sup> Traditional television platforms have not kept pace with Internet CPMs for video, largely because the Web and other online applications and services offer increasingly sophisticated two-way interaction between advertiser and viewer, as well as granular tracking data unique to the interactive platform.
24. Advertisers are also taking advantage of the opportunity the Internet provides for free advertising by creating videos that they post to sites like YouTube or on their corporate website in the hopes that they will ‘go viral’ and be shared by viewers. Examples include “Bride has a massive wig out”, created for Sunsilk hair care, which was viewed 2.8 million times in the two weeks after it was posted, and “Tea Partay”, created for Smirnoffs, which was viewed more than 1.3 million times. In the case of “Tea Partay”, visitors to the Smirnoff website posted it to YouTube, so nothing was paid to YouTube by Smirnoff. Companies can also take advantage of the lack of advertising regulation on the Internet to post edgier videos on their websites.
25. The value that advertisers appear to place on the interactive possibilities of online video advertising indicates continued growth for this category. Some observers have noted that there is the potential for an advertising revenue outflow from Canada to other jurisdictions. The impact of such a trend is unclear as there is currently little understanding of the source of dollars flowing into such online vehicles as search keywords, banners and other non-video advertising methods. While current incentives such as provisions of the *Income Tax Act* that offer credit for advertising placed with

<sup>7</sup> Interactive Advertising Bureau of Canada, *2008 Actual + 2009 Estimated Canadian Online Advertising Revenue Survey*.

<sup>8</sup> PricewaterhouseCoopers, *Global Entertainment and Media Outlook: 2009-2013*.

<sup>9</sup> September 2007 research by online ad firm doubleclick indicates that, in 2006, 8% of video ads generated a user interaction, users click to play a video ad more often than they click banners, and clicks to video ads are five times higher than for image ads. [http://www.doubleclick.com/insight/pdfs/dc\\_videobench0702.pdf](http://www.doubleclick.com/insight/pdfs/dc_videobench0702.pdf).

<sup>10</sup> <http://www.clickz.com/3631009>.

Canadian broadcasters appear sufficient to prevent a wholesale loss of revenue to non-Canadian sources, there is no guarantee that new forms of advertising that reach Canadians from off-shore will not divert significant revenues from the Canadian broadcasting system.

26. There are clear indications that the Canadian advertising sector has begun to embrace online video advertising. In November 2008, the Institute of Communications and Advertising, the Association of Canadian Advertisers and the ACTRA reached an agreement that, broadly, halves the rates paid to performers for the use made of their talent on new media platforms and builds in flexibility for creating lower-budget new media content by, for example, offering a new four-hour session call at the half-price rates. This temporary, experimental rate card for commercials made for new media will expire on 1 December 2010, six months prior to the end of the agreement.
27. As the return on investment for Internet advertising, especially video advertising, is still unproven, the ACTRA commercial agreement has the potential to accelerate investment in the medium—or at least to ensure that performer compensation does not serve as a disincentive.
28. Broadcasters have tentatively begun exploring the value of advertising as a support to the distribution of online, professional programming. Early learning, according to panelists at the Interactive Advertising Bureau of Canada's *Online Video in Canada* event held in April 2009, is that video advertising embedded into segments is more effective than advertising on the margins of a video player. This bodes well for broadcasters as the intermediaries of content. Further, consumers seem to be more open to advertising around long-form content, which again works in broadcasters' favour in terms of attaching revenue to professional content. However, considerable work remains to be done with respect to measuring the effectiveness of video advertising—an issue that will not be settled for at least two or three years as business models and technology continue to evolve.

### 3.2.1 Personal Video Recorder (PVR)<sup>11</sup> Penetration in Canada

29. According to a study conducted by Solutions Research Group in November 2008, PVRs are in approximately 1.7 million Canadian homes, representing a penetration rate of 13%. This is in line with a separate study conducted in July 2008 by OmniVu/Television Bureau of Canada study which placed Canadian PVR penetration at 13.5%.<sup>12</sup> By comparison, the penetration rate for PVR in the U.S. stands at approximately 25%.<sup>13</sup>
30. A study conducted by Media Technology Monitor also reveals that 80% of PVR owners watch a program recorded on their PVR in a typical week and that PVR owners watch approximately 7 hours on average of PVR-recorded shows per week. Interestingly, of those surveyed who did not own a PVR, 13% indicated they would probably or definitely buy or rent a PVR in the next 12 months, compared to 11% in 2007 and 13% in 2006.<sup>14</sup> This trend demonstrates that Canadian consumers have for the most part been relatively slow but steady in adopting PVR technology. PricewaterhouseCoopers shows the number of households in Canada with a PVR growing from 2.2 million in 2008 to 6.7 million in 2013, a CAGR of 32.10%, in its *Global Entertainment and Media Outlook 2009-2013* report. The corresponding penetration is 17.7% of households in 2008 growing to 51.9% in 2013. It should be noted that PVRs may be a transitional technology as more BDUs offer IPTV or IP-based portals to access programming and as such the growth in penetration of PVRs may be limited.

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<sup>11</sup> Personal Video Recorder (PVR) and digital video recorder (DVR) are both used to describe hard drive-based digital video recorders; in this document the term PVR will be used.

<sup>12</sup> [www.tvb.ca/pages/faq.htm](http://www.tvb.ca/pages/faq.htm), *Frequently asked questions*.

<sup>13</sup> [www.tvb.ca](http://www.tvb.ca), SRG Says On Demand TV Viewing Moving Online in Canada, 10 February 2009.

<sup>14</sup> Media Technology Monitor, *Personal TV, Anytime, Anywhere 2008*.

31. Although early adopters of PVRs were heavy users, later adopters have demonstrated less usage, using their PVRs approximately two-thirds less.

### 3.2.2 Ad avoidance on PVRs

32. Although it was initially believed that PVRs could deal a fatal blow to advertising supported television, recent research has demonstrated that the impact of PVRs on advertising may not be as profound as originally expected. In fact, according to CBS Research, PVRs have had the effect of increasing program audiences, demonstrating that those with PVRs generally watch more television.<sup>15</sup>
33. Live television is still seemingly well entrenched in the television consumption habits of North American consumers. A study conducted in Canada by BBM Analytics in July 2008 revealed that 99% of television viewing is still done in live mode.<sup>16</sup> According to studies conducted by Turner Broadcasting in the U.S., families with PVRs spend 15 to 20% of their viewing time watching pre-recorded shows.<sup>17</sup>
34. Not surprisingly, advertisers have responded to the popularity of PVRs by adapting advertisements to PVR consumption habits, most notably to offset the propensity of PVR users to fast forward through commercials.
35. Among these adaptive measures, advertisers have developed static advertisements that convey the desired message at high speeds, as well as putting short programming segments in the middle of advertising breaks, or even running advertisements that resemble programs. Another technique used to counter ad avoidance is to overlay the ad in a crawl or banner along the bottom of the television screen or to split the screen to concurrently display ads while the program, most typically one that does not naturally have breaks like auto racing, is broadcast. In addition to these measures, advertisers have also increased the frequency of product placement within programs.
36. There is evidence to support the thesis that these measures seem to be having the desired effect, as the BBM study cited above revealed that almost 75% of those surveyed reported that they were aware of specific advertisers or brands while in fast forward mode. Furthermore, more than 50% of people surveyed who use their PVR to fast forward or skip commercials stop and watch relevant or entertaining ads, particularly in situations where the brand being displayed is of interest to them or if they find the commercial to be entertaining.<sup>18</sup> These findings are similar to those found in the CBS Research study in the U.S, which also revealed that ad recall among PVR users was affected by the quality of the commercial and the genre of programming.
37. Going forward, set-top-boxes, which for the most part house PVRs, will undoubtedly enable innovative advertising capabilities for advertisers such as targeted advertising, addressable advertising or interactive advertising. These innovations may help offset the negative impact that recording was expected to have on the television advertising industry.

### 3.2.3 The outlook for NPVR

38. A NPVR is generally defined as a service that allows individual consumers to record programs of their choice. The programs are stored in a service provider's networked facility in order to be accessed at any time by the consumer.
39. NPVRs operate in a manner similar to VOD, with the exception that the consumer decides what content is to be recorded rather than the content offering being dictated by the service provider. Although most Canadian distributors offer VOD services, there are currently none that offer NPVR services.

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<sup>15</sup> [www.tvb.ca/pages/tv-pvr.htm](http://www.tvb.ca/pages/tv-pvr.htm), *Television and the PVR*.

<sup>16</sup> [www.tvb.ca](http://www.tvb.ca), *Commercial Skipping "Not an Issue"*, 4 September 2008.

<sup>17</sup> [www.economist.com](http://www.economist.com), *The revolution that wasn't*, 23 April 2009.

<sup>18</sup> [www.tvb.ca](http://www.tvb.ca), *Commercial Skipping "Not an Issue"*, 4 September 2008.

40. The numerous benefits of NPVRs relative to set-top PVRs for both consumers and service providers suggest a positive future outlook for NPVRs. Set-top PVRs can account for as much as 10% of capital spending by major service providers, meaning that network PVR deployment could result in substantial cost savings for providers while eliminating the requirement to install, maintain and update PVR hardware. Network PVRs could also allow service providers to customize service offerings and take advantage of future targeted advertising and dynamic ad insertion opportunities.
41. For their part, consumers would no longer need set-top PVR hardware but would retain the benefits and functionality of set-top PVRs, while potentially having increased flexibility to expand storage capacity without necessitating hardware upgrades. If configured as such, network PVRs could also allow consumers to record more programs concurrently, as hardware constraints limit the number of concurrent recordings for most set-top PVRs.
42. As Canadian service providers increasingly invest in developing their VOD platforms and as more content is made available on VOD libraries, there is reason to question the future relevance of set-top PVRs, particularly where non-live programming is concerned. Given that most VOD content is made available within 48 to 72 hours of the original air date, consumers would generally have access to their desired content without necessarily having to record shows via their PVRs.
43. As demonstrated in the European and Asian markets where NPVR services are available, there are many different approaches and business models being explored for NPVR services. For example, when Italian provider Fastweb initially launched its NPVR service in 2002, it required that its viewers request the recording of a program. However, since 2006, Fastweb has made all broadcast programs from the previous three days available to viewers, making its NPVR service similar to VOD. For its part, Swiss provider VarioTV offers a model based on consumer use, whereby consumers receive 4 hours of total storage in the basic cable package, with the option of paying 30 Swiss francs for 30 hours stored for up to 30 days or 60 Swiss francs for 60 hours of storage for up to 60 days.
44. Many content providers contend that NPVRs violate copyright rules, making the contentious copyright implications of NPVRs the largest obstacle to the launch of NPVR services in Canada. While rights to distribute content via VOD platforms are negotiated between service and content providers, NPVRs are regarded as a way to circumvent the negotiated rights process.
45. In the U.S. in 2006, Cablevision Systems Corp. announced plans to offer a NPVR system that would allow subscribers to store television programs on the cable operator's computer servers and then play them back at will. A number of film studios and major television networks, including Time Warner Inc., News Corp., CBS Corp. and Walt Disney Co., sued Cablevision Systems Corp. in an attempt to block the new service on the basis that it violated copyright laws. This has resulted in an extensive court battle. The U.S. Appeals Court ruled in August 2008 that the NPVR should be treated essentially the same as a set-top box PVR and that it was not directly in violation of copyright laws. In June of 2009, the Supreme Court cleared the way for Cablevision Systems Corp. to offer its service.
46. In Canada, an Act to amend the *Copyright Act* (Bill C-61) was introduced to the House of Commons in June 2008 (and later died on the order paper) which included a provision to allow personal time-shifting, while specifically excluding network-based video recorder services from its scope (Section 29(23)5). In the summer of 2009, the Departments of Industry and Canadian Heritage undertook public consultations as part of the process to update the *Copyright Act*, with a view to introducing a new bill.
47. Although some Canadian providers indicated interest in a future NPVR deployment during the Commission's 2008 review of the BDU regulatory framework, NPVR

deployment may require partnerships with broadcasters and content providers in light of Canadian copyright rules. In response to the Commission's call for comments in 2008 on a proposed regulatory framework for VOD undertakings, most BDUs stated that technical, business and copyright issues are currently obstacles to the roll-out of NPVR services. As a result, deployment of NPVR services in Canada remains highly uncertain in the near-term.

### 3.2.4 Increasing demand for VOD services

48. As a key differentiator between cable and IPTV providers and DTH television services, VOD could continue to reshape the competitive dynamic between the two competing television distribution technologies as DTH providers must rely on distant signals to provide time-shifting capabilities to consumers. This is due to technical limitations which currently prevent DTH providers from offering true VOD services to consumers. While cable and IPTV providers could opt to eliminate distant signals in favour of an all-VOD platform, DTH providers may have little leverage in negotiating distant signal rights with broadcasters. However, it should also be noted that some Canadian DTH providers, Bell Canada for example, are offering Internet VOD to their subscribers.
49. According to a study conducted by BBM Analytics for Media Technology Monitor, among digital cable and IPTV subscribers, VOD penetration for the Canadian English-language television market stood at approximately 30% in both 2007 and 2008. This is a slight increase versus the 24% penetration rate of 2005.<sup>19</sup> However, in terms of the total 18+ English-language population, Canadian VOD penetration stands at 9%. Where Canada's 18+ French-language television market is concerned, VOD penetration among cable and telecommunication company subscribers is slightly higher, increasing from 28% in 2005 to 39% in 2008. However, in terms of the total 18+ French-language population, VOD penetration stands at 12%.<sup>20</sup>
50. However, although growth in VOD penetration among the general population can be characterized as modest but nonetheless steady, the service's popularity among users has increased at a more robust pace. In April 2009, Rogers Communications Inc. reported that customer demand for its VOD services had more than doubled since 2005, with usage of the service increasing from 50 million views in 2005 to over 100 million views in 2008.<sup>21</sup> For its part, Shaw Communications Inc. reported a 74% year-over-year increase in demand for its VOD services, having received 83,000 in one day during the month of March 2009.<sup>22</sup>
51. In terms of revenues attributed to VOD, according to PricewaterhouseCoopers's *Global Entertainment and Media Outlook*, Canada's VOD revenues are expected to reach U.S.\$110 million in 2009, with an estimated CAGR of 14.9% into 2013 almost doubling the market's total value to U.S.\$214 million.<sup>23</sup>
52. Growth in VOD will be driven primarily by an increase in available content as distributors continue to expand their VOD offerings in order to drive incremental revenues from the platform. For terrestrial cable providers, VOD also represents a significant competitive differentiator versus DTH providers as the unidirectional nature of the satellite architecture prevents satellite providers from offering a true VOD experience.
53. As part of the 2008 review of the BDU regulatory framework, the Commission adopted a policy with respect to Canadian distant signals that would require all licensed BDUs to obtain the consent of OTA licensees prior to distributing their local stations in a distant market. As such, OTA licensees would be permitted to negotiate payment from BDUs

<sup>19</sup> Media Technology Monitor, *Personal TV: Anytime, Anywhere 2008*.

<sup>20</sup> Media Technology Monitor, *Télévision personnelle : en tout temps et en tout lieu 2008*.

<sup>21</sup> <http://cable.tmcnet.com>, *Personalized TV with Rogers on Demand proves hard to resist*, 6 April 2009.

<sup>22</sup> <http://news.moneycentral.msn.com>, *Shaw Video on Demand is in Demand*, 21 April 2009.

<sup>23</sup> PricewaterhouseCoopers, *Global Media and Entertainment Outlook: 2009-2013*, p.186.

for the retransmission of their local stations as distant signals. While distant signals have historically allowed distributors to cater to the time-shifting demands of consumers, the development of expanded VOD offerings would allow them to provide consumers with almost endless time-shifting flexibility, thus reducing the need to carry distant signals.

### 3.2.5 Cable and IPTV response: targeted advertising

54. In response to the competitive threat by new, interactive platforms and trends towards ad avoidance, broadcasters and software firms are developing strategies and formats to increase the effectiveness of the advertising message. Technologies are now employed or being contemplated by cable and satellite operators that ride on the digital platform with messages delivered to a specific demographic using set-top boxes.
55. There are three levels of advertising strategies that are being developed today:
  - targeted – aimed at households in a specific geographic area or based on the type of programming delivered. This approach is based on audience ratings/data collected by companies who provide the advertiser with demographic information about a served area;
  - addressable – involves dynamic ad insertion into programs such that the ads are directed to a particular household, based on who is watching according to select characteristics – age, gender, income, geography. The set-top box stores information on the viewing habits, builds a profile of the subscriber, matches it with other information such as ratings and delivers a more efficient and effective commercial for which advertisers are willing to pay a premium (addressable is often referred to as “super targeted”); and
  - interactive – enables the viewer to use a remote control to stop the message, seek more information on the advertised product or participate in a poll or game. These ads enable advertisers to obtain richer consumer data, fine-tune their messages and evaluate the ad’s effectiveness based not only on exposure but transactions by the viewer.
56. Targeted advertising has been in use for some time and is being further refined to add more customized messages. OpenTV<sup>24</sup> and Singular Logic (Ads by Choice<sup>25</sup>) are examples of software companies which develop targeted advertising solutions.
57. Addressable advertising has been in testing stages in large urban U.S. centers for over two years. In 2008, Comcast Corp. considered that it may take about three years for the cable companies and ad agencies to begin to implement this technology as part of their advertising strategy. In June 2009, DirecTV announced that in January 2011 it will implement a commercial rollout of an addressable advertising system using technology from Invidi. This announcement may accelerate or influence other operators’ technology decisions.
58. Vidéotron Ltd. launched interactive advertising on its Illico digital cable network in 2006. TVA Group Inc. also uses it in its VOD ads. Both use etc.tv, an advertising-on-demand network which allows television viewers to link directly to a long form advertisement from a traditional length television ad.<sup>26</sup> Interactive ads have been used by large cable companies in the U.S. over the last two years, but will be increasingly employed by advertisers on their websites.
59. Over the next five years advertisers, broadcasters and broadcast distributors will be placing increasing emphasis on the effectiveness of advertising messages, the value of

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<sup>24</sup> [www.opentv.com](http://www.opentv.com)

<sup>25</sup> [www.singularlogic.com](http://www.singularlogic.com)

<sup>26</sup> <http://www.etc.tv/home.htm>

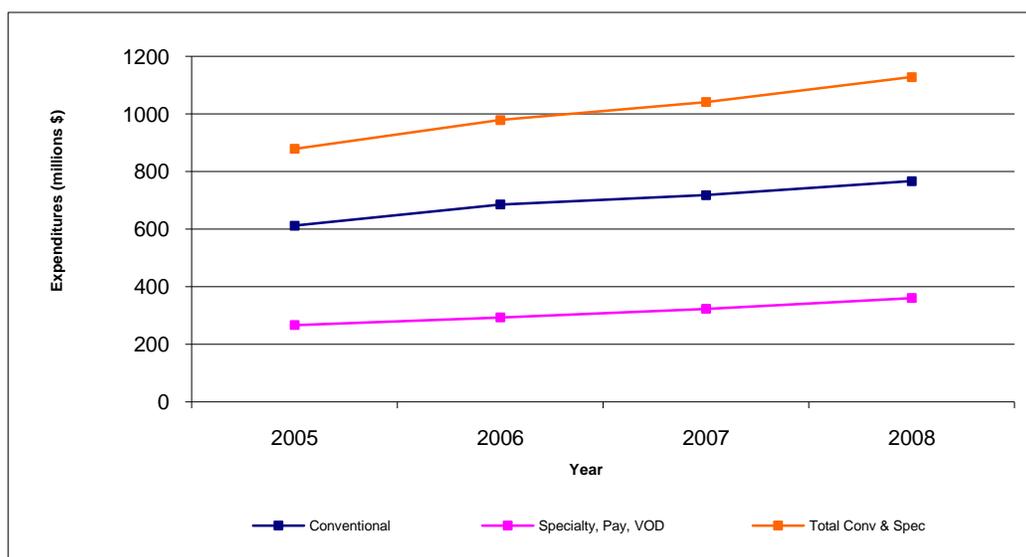
these strategies in delivering better returns on investment and determining how to share in the revenues based on the new advertising technologies.

60. These new advertising technologies have the potential to challenge current regulatory approaches in the mid-term, particularly those defining the distributor/broadcaster relationship. The evolution of the business model for these services is still in the early stages and there are challenges ahead to determine the role of broadcasters and distributors in these new value chains.

### 3.3 Continued protection for the rights market

61. Canadian rightsholders and industry observers have expressed concerns that online video broadcasting may result in the creation of a North American or even global rights market for television programming, bypassing Canadian licensees and jeopardizing distributor and broadcaster contributions to the Canadian broadcasting system.
62. Building on protection for Canadian broadcasters, foreign producers have generally found it worthwhile to reach Canadian audiences through the Canadian broadcast system, treating Canada as a separate rights market. Overall, Canadian broadcasters spent \$1.15 billion on non-Canadian programming in 2008. This does not include the \$281 million paid by Canadian distributors in affiliation payments to U.S. cable and satellite services. As shown in Figure 5 below, total expenditures on non-Canadian programming have trended significantly upward in recent years, increasing at a compound annual rate of 9.4% between 2005 and 2008.

**Figure 5. Non-Canadian programming expenditures by conventional, specialty, pay and VOD services**



Source: CRTC, *Communications Monitoring Report 2009*

63. An important consideration is the extent to which technological protection measures and digital rights management technologies will continue to serve as an underpinning for the existing rights regime.
64. To date popular American network programming has generally been geo-blocked<sup>27</sup> by U.S. networks and online aggregators to restrict non-Americans from accessing it when delivered online. Increasingly accurate geo-blocking technologies are being used by the

<sup>27</sup> Geo-blocking or geo-gating is the practice of preventing access to websites from visitors in particular countries or regions by using their IP address to determine their location. Other information may be used to supplement the IP address such as e-mail addresses, payment/credit card information and registration information.

U.S. networks on their own portals and on popular U.S.-based aggregators such as Hulu.com (owned by NBC/News Corp.). Apple Inc.'s popular iTunes store maintains separate destinations for American, Canadian, U.K. and other jurisdictions. Television shows available for download in the U.S. may not be available in Canada if a Canadian broadcaster has not negotiated the appropriate rights from the producer and an agreement with Apple Inc.

65. Current approaches to protecting territorial rights by geo-blocking depend on the successful identification of visitors' geographic location. Visitors from a jurisdiction for which the content provider has not licensed distribution rights are generally either directed to a page explaining that the content is not available or to a site operated by a content provider that has negotiated the appropriate rights.<sup>28</sup> To date these access controls have relied on identifying visitors' IP addresses to determine their national origin in order to block unauthorized visitors.
66. The continued effectiveness of blocking access to websites or content based on IP address is not certain. Proxy software, which masks a user's true location, is increasingly prevalent, if not always effective. The cycle of circumvention technique development and corresponding anti-circumvention responses will continue for the foreseeable future. In the mid-term, there is no evidence that circumvention techniques will become predominant enough or resistant enough to technological responses to endanger whatever geographic rights market models evolve.
67. The extent to which U.S. producers are willing to make their content available to Canadians online, either by subscription or supported by advertising, will clearly be a function of which distribution tools maximize revenues. The existing rules supporting a separate Canadian rights market for private television have resulted in a market for foreign programming worth \$1.4 billion to those broadcasters and producers between affiliation payments and program acquisition. A loss of exclusivity that would occur if Canadians could consume programming content from non-Canadian broadcasters would likely diminish the value to Canadian broadcasters and distributors of that content, significantly reducing the price they are willing to pay.
68. To put this into perspective, video/rich media advertising for wired platforms was estimated by PricewaterhouseCoopers to be worth U.S.\$16 million in 2008. This is forecast to grow to U.S.\$45 million by 2013.<sup>29</sup> The loss to broadcast content companies of any significant part of Canadian affiliation and licensing revenues seems unlikely to be replaced by additional spending by advertisers in this context.
69. In large part, advertising revenues in radio are driven by locally produced and relevant drive-time programming including news and music. Spending by Canadian broadcasters on syndicated radio programming could be more easily replaced within the system, but that the overall effect on contribution to the Canadian system is less of a concern.

### **3.4 Alternative programming sources**

70. The issue of program rights is related to the growth of new hardware products coming on stream that provide audiences with programming from various professional and non-professional sources outside traditional distribution media such as cable television or DTH services.
71. Multiple vendors now offer set-top boxes that provide television and other programming delivered over Internet. These include devices such as the AppleTV, the Roku Netflix box, the Vudu set-top box and ZillionTV. Furthermore, popular game consoles with

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<sup>28</sup> Canadian visitors, for instance, to Comedy Central's website seeking Jon Stewart's *Daily Show* content are redirected to the Canadian rightsholder for that show – in this case CTV-owned The Comedy Network.

<sup>29</sup> PricewaterhouseCoopers, *Global Media and Entertainment Outlook: 2009-2013*, p.186.

installed bases in the millions worldwide also feature software allowing streaming, downloading and television playback of programming.

72. These set-top boxes and other hardware devices are increasingly providing television programming to American users, but the vast majority of this content, especially high-quality professional U.S. programming, will only be available to Canadians as deals are struck between the Canadian rightsholders that have exclusive licences for the distribution of programming in this country and the U.S. content aggregators that provide the services to these boxes (provided the geographic rights market is maintained as outlined earlier).
73. Canadian broadcasters will take advantage of these technologies as rights issues become clearer. CTVglobemedia Inc. and the CBC have both made a significant quantity of Canadian television programming available through iTunes' online store, and various providers of specialty service programming have done the same. However, there is virtually no mass audience U.S. drama or other programming available through Internet-enabled set-top boxes at this time. Set-top box vendors typically use a combination of geo-blocking and credit card billing address to determine a user's location and to ensure that only content for which the broadcaster has rights in Canada is available to Canadians.
74. While various broadcasters, licensed and unlicensed, make their programming available for viewing on demand through web portals, the use of set-top boxes is generally the only way to purchase high-quality television content suitable for viewing on a large screen, especially for HD content. In some cases, the set-top box can serve as a media extender, providing a link between a PC-based library of content and television screens.
75. In 2008 and 2009, various television manufacturers, including Samsung, LG and Phillips, announced Internet-enabled televisions, or television sets that have built-in network connectivity (both wireline and wireless). The TV sets are often able to play video files that sit on a media server PC in the home network as well. Some analysts believe that the rising trend of using televisions to access the Internet is resulting in an increased amount of content being supplied by Internet companies. In the U.S., Amazon, Netflix and Blockbuster have all announced additional content from major entertainment studios, as well as deals with hardware manufacturers to connect their services to the television.<sup>30</sup> With the use of home media server and Internet-access capabilities built into televisions, some consumers may move away from physical, hardware-based set-top boxes to software-based set-top box capabilities.

#### **3.4.1 The trend toward online content aggregation**

76. An innovative environment for the streaming of high-quality, professionally produced content is developing south of the border with potential implications for the Canadian market.
77. Broadcasters are testing the distribution of content online with direct-to-viewer websites. This strategy's challenge is the fragmentation of video sources, making it increasingly difficult to compete in a crowded online marketplace for professionally produced content.
78. The decision by large, vertically-integrated Hollywood studios to experiment with online distribution of content via online aggregators such as Hulu (co-owned by NBC and Fox) and Google-owned YouTube is an indication that the market may be moving towards an aggregation model that, in many respects, mirrors the traditional broadcast distribution model.

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<sup>30</sup> [http://www.informationweek.com/news/personal\\_tech/TV\\_theater/showArticle.jhtml?articleID=219100136](http://www.informationweek.com/news/personal_tech/TV_theater/showArticle.jhtml?articleID=219100136), *Connected TV Sales Booming*.

79. Still to be proven is the thesis that consumers increasingly prefer a one-stop shopping model, where content from major networks and content providers is featured on a limited number of portals. This could simplify the consumer experience by leveraging the significant drawing power of major content providers such as broadcasters and packaging that programming on a unified platform. It would allow content providers to enhance promotional activities by pooling resources under a single brand, as well as allowing advertising opportunities across different shows or show types by offering advertising options with similar audience demographics in a network-neutral manner.
80. Although still much smaller than its rival YouTube, which accounts for 41% of all U.S. streamed video, Hulu now ranks as the fourth most popular destination for online video, and ScreenDigest predicts that Hulu's 2009 ad revenue will match that of YouTube, with both drawing in approximately U.S.\$120 million in the U.S.<sup>31</sup>
81. Hulu's business model represents a relatively balanced approach that accounts for the interests of three major stakeholders: content providers, distribution partners and Hulu. Specifically, the proposed business model involves a distribution of revenues that would see content partners keep 70% of gross ad revenues, distribution partners (third-party syndication sites) 10% and Hulu approximately 20-30% depending on whether a distribution partner is involved. This model may evolve.
82. There are indications that YouTube plans to migrate away from its roots as a user-generated content portal by redesigning its portal to clearly distinguish premium content from user-generated content in order to strengthen its business model by creating a more advertising-friendly environment.<sup>32</sup> This is a clear sign that major players in the industry have begun to identify key success factors that could lead to a profitable business case for the streaming of professional content via the online platform.
83. The landscape may evolve differently in this country. With 90% of Canadian households subscribed to a BDU for television service and with Canada's top four cable BDUs and two DTH providers capturing 90% of all BDU subscribers,<sup>33</sup> Canada's largest BDUs possess a substantial amount of leverage in determining content distribution, regardless of platform.
84. As a result, BDUs may position themselves to stay relevant in the online distribution value chain rather than cede the distribution of content to over-the-top third-party aggregators that may or may not be broadcasters. BDUs are starting to attempt to use their expertise as content aggregators in the traditional broadcasting arena, their longstanding relationships with broadcasters (which generally hold exclusive rights to the most popular video content) and the vertical integration that has equipped many BDUs with significant Internet capability. Hence, it is possible that in lieu of a U.S. model that would see aggregators such as YouTube or Hulu delivering streamed video shows to Canadian audiences, BDUs could offer portals combining aggregated content from all major broadcasters, thereby retaining control of content delivery as well as minimizing the threat of competition. In the fall of 2009, Rogers Communications Inc. and Bell Canada both launched such portals.
85. A major question remains whether Canadian BDUs would come together to offer a single pan-Canadian portal, or whether each would attempt to offer a portal in its distribution regions. Current competitive dynamics in Canada seem unlikely to produce a single portal as two of the largest BDUs, Rogers Communications Inc. and Vidéotron Ltd., will soon be competing in the 3G wireless arena, and developments in wireless introduce the potential for out-of-territory competition between the entities.
86. A BDU- vs. broadcaster-led portal environment will likely be shaped by the different power positions held by each. Whereas U.S. broadcasters are in many cases the

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<sup>31</sup> <http://newteevee.com/2009/03/31/analyst-hulu-to-bring-in-120-million-in-09/>

<sup>32</sup> <http://topics.nytimes.com/top/news/business/companies/youtube/index.html>

<sup>33</sup> CRTC, *Communications Monitoring Report 2009*.

producers of the content, thereby owning the corresponding rights, Canadian broadcasters invest substantial sums to acquire these rights and must monetize them by selling advertising that is highly dependent on distribution to the broadest possible number of cable subscribers.

87. As in the case of Hulu, a successful business model for Canada will likely be predicated upon a revenue-sharing agreement between key stakeholders such as content providers and distributors. Furthermore, although a business model for Canada remains undefined, a subscription revenue model, tied to existing BDU services, is starting to emerge as BDUs look for ways to retain control of their customer bases and avoid diluting revenues from traditional distribution platforms.
88. Given its much smaller market size relative to the U.S., there is doubt as to the Canadian market's ability to generate the advertising necessary to support a portal based solely on an advertising revenue model.
89. As for the potential of seeing Hulu or a similar service launch in Canada, the biggest challenge would undoubtedly be resolving program rights issues. However, the fact that Hulu is owned by major U.S. content providers can only help its cause in establishing a potential framework for a Canadian Hulu. If these broadcasters want Hulu to be available in Canada, they can take the necessary steps when negotiating the Canadian digital rights to their programming. Canadian broadcasters have long argued that they need U.S. programming to be profitable on the traditional television platform, meaning that they have very little leverage when negotiating traditional and digital rights to U.S. content. Although the limited size of the Canadian market creates uncertainty about the applicability of Hulu's advertising-only model in Canada, Hulu has indicated that it intends to expand internationally, potentially including Canada.<sup>34</sup> Nonetheless, replacing the revenues that Canadian broadcasters are able to offer on the basis of significant ad sales will be a challenge.

### 3.5 Radio

90. In 2008, there were 1,191 over-the-air (terrestrial) radio services, of which 681 were AM/FM commercial radio stations. That year, private commercial radio broadcasters' advertising revenue rose 5% to \$1.6 billion from \$1.5 billion over the previous year.<sup>35</sup>
91. Commercial radio has experienced healthy growth in advertising revenues over the last five years. Beginning with 2004, advertising revenues of \$1.2 billion have had a CAGR of 7% to 2008. During this period, radio profit before interest and taxes margins have been in the 18% to 21% range.
92. Technological developments on various media platforms and growth of television specialty channels and Internet services have brought increased competition for audiences and advertising revenues. From 2004 to 2008, the weekly hours per listener have declined 1% annually from 21 hours per week to 20 hours per week.<sup>36</sup> In terms of daily media consumption, it has been found that adults spend a third of their media time with radio, just over a third with television and a fifth of their time using the Internet.<sup>37</sup>
93. However, radio has held its own in terms of its share of advertising revenues relative to other media sectors. OTA radio's market share of total advertising expenditure among all media has been a consistent 10% from 1998 to 2008.<sup>38</sup> This is in spite of the fact that Internet advertising revenue share is growing at faster rate than the shares of each

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<sup>34</sup> [http://www.hulu.com/about/media\\_faq](http://www.hulu.com/about/media_faq) and

[http://www.mediapost.com/publications/?fa=Articles.showArticle&art\\_aid=105615](http://www.mediapost.com/publications/?fa=Articles.showArticle&art_aid=105615)

<sup>35</sup> CRTC, *Communications Monitoring Report 2009*.

<sup>36</sup> CRTC, *Communications Monitoring Report 2009*.

<sup>37</sup> Radio Marketing Bureau Presentation to CRTC, 20 January 2009.

<sup>38</sup> CRTC, *Perspectives on Canadian Broadcasting in New Media*, May 2008.

of the major media sectors such as television and print, although much of the revenue accruing to the Internet is non-broadcasting related.<sup>39</sup>

94. Indications are that the economic slowdown in the U.S. and Canada will likely have an impact on radio advertising growth in the near-term. The Canadian Radio Marketing Bureau, which monitors 15 major city radio markets in Canada, has reported that from September 2008 to March 2009, advertising revenues in these markets were \$523 million, down from \$539 million for the same interval in the previous year, a decrease of 3%.<sup>40</sup> For the period 2009 to 13, it is estimated that radio advertising revenues will shrink at an average compound annual rate of 2.1%, falling to U.S.\$1.2 billion in 2013.<sup>41</sup>
95. Although the economy will likely have an adverse effect on radio advertising in the near-term (2009 to 2011), PricewaterhouseCoopers expects that new stations and radio station collectives will contribute to a recovery in the long run. One of the key drivers of revenues that will re-emerge will be the sale of advertising by radio station collectives selling national time across a number of markets simultaneously, enabling advertisers to reach a large number of people in a single buy.<sup>42</sup>
96. The radio industry's financial success in the last decade was, in part, due to general economic growth, regulatory changes which in 1998 allowed for greater concentration of ownership to enable it to withstand competition from other media, regional/local businesses' continued use of radio for advertising (unlike television broadcasters' reliance on national advertising) and conversion from the AM to the more popular FM band. In addition, stations are free to self-regulate with respect to the number of commercial minutes they want to air per hour.
97. With the growing popularity of the Internet, radio has evolved to become a medium compatible with and complementary to the Internet. It draws audiences by way of podcasts, extending its reach to radio audiences on its website and engaging their views and comments. In addition, the majority of radio broadcasters now simulcast online and some deliver music on wireless handsets. There are over 600 radio stations from across Canada streaming live on the Internet, according to Canadian Web Radio (<http://www.canadianwebradio.com/>). For advertisers, radio stations provide an Internet venue for commercial messages and links to local businesses.
98. Over-the-air radio has stayed relevant because of its accessibility, its connection with the community it serves in terms of music played, information content (news, weather, sports), its non-obtrusive appeal (listeners can engage in other activities while listening to radio) and the fact that it is free. Although the younger demographic is listening to less radio (see table 2), the Radio Marketing Bureau is of the view that they are repatriated upon maturing into the next life-phase.

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<sup>39</sup> Ibid.

<sup>40</sup> Radio Marketing Bureau Inc., *Trans-Canada Radio Advertising by Market (TRAM) Report Year-To Date March 2009*.

<sup>41</sup> PricewaterhouseCoopers, *Global and Media Outlook: 2009-2013*.

<sup>42</sup> PricewaterhouseCoopers, *Global and Media Outlook: 2009-2013*.

**Table 2. Average weekly hours tuned per capita by age group<sup>43</sup>**

	2004	2005	2006	2007	2008
<b>Weekly hours per age group</b>					
All persons 12+	19.5	19.1	18.6	18.3	18.3
<i>Annual Growth</i>	0.0%	-2.1%	-2.6%	-1.6%	0.0%
Teens 12 - 17	8.5	8.6	7.6	7.2	7.2
<i>Annual Growth</i>	0.0%	1.2%	-11.6%	-5.3%	0.0%
Adults					
18 - 24	15.7	15.2	14.1	13.3	13.1
<i>Annual Growth</i>	-3.7%	-3.2%	-7.2%	-5.7%	-1.5%
25 - 34	19.3	18.1	18.3	17.4	17.3
<i>Annual Growth</i>	0.0%	-6.2%	1.1%	-4.9%	-0.6%
35 - 49	21.5	21.0	20.6	20.2	19.9
<i>Annual Growth</i>	0.9%	-2.3%	-1.9%	-1.9%	-1.5%
50 - 54	21.6	21.5	21.0	21.2	21.5
<i>Annual Growth</i>	-0.9%	-0.5%	-2.3%	1.0%	1.4%
55 - 64	22.1	21.9	21.1	21.1	21.1
<i>Annual Growth</i>	0.9%	-0.9%	-3.7%	0.0%	0.0%
65 +	22.3	21.6	21.3	21.5	21.6
<i>Annual Growth</i>	0.0%	-3.1%	-1.4%	0.9%	0.5%

Source: CRTC, *Communications Monitoring Report 2009*

99. The potential for diminishing audience levels due to fragmentation brought about by the proliferation of new media choices is not as great for OTA radio as that for OTA television. Unlike Internet browsing and television viewing which requires dedicated attention on the part of a user, radio can be listened to by an audience engaged in other activities—driving, working, shopping, etc. Over the next five years it is expected that radio will endure as a medium available anytime, anywhere to listeners.

### 3.5.1 Outlook for radio

100. Audio broadcasting faces a rapidly changing environment. Today, audiences have many options in radio listening, across a range of platforms from traditional AM/FM radio to cable, satellite and Internet. It is likely in the mid-term that “radio” will evolve to encompass an even broader range of listener choices, delivered over a variety of distribution mechanisms. Some radio broadcasters are defining the evolution of radio as the addition of video or images to the audio stream, which could see radio evolve to mobile video.
101. For established broadcasters, these platforms and technologies bring the following new challenges: investing in new modes of delivery, responding to increased competition for audiences and generating new revenues. Unregulated audio technologies include MP3 players, iPods, Internet music, radio streaming, podcasting, peer-to-peer file sharing, downloading and cell phone radio.
102. Although conventional radio is doing well, new audio services and content delivered via the Internet are drawing listeners. With barriers to entry falling in the delivery of these services, the question then becomes: what is content the “next” radio to deliver and how can this content be more tailored to a listener’s tastes?
103. Developments in personalization (custom audio content) and portability (podcasts, MP3 players) are enabling listeners to shape a more customized audio service. The following describes some of these developments.

<sup>43</sup> CRTC, *Communications Monitoring Report 2009*.

104. MySpace, a social networking website launched in 2004 with an interactive user-submitted network of friends, groups, music and videos, allows artists (and users) to upload and sell their music to millions of members daily and enables users to create custom playlists.
105. A proprietary media player application introduced by Apple Inc. in 2001, iTunes, which is used to organize and play digital music (and video) files available on the Internet, is now provided on Apple Inc.'s iPod and iPhone. Apple users can download and organize iTunes from a store of music (and video applications) on the Internet for free. A selection of free Internet radio stations is also provided. Other device manufacturers and content providers are following suit.
106. Among the many radio services available over the Internet, there are audio websites with a wide range of genres that have evolved to deliver more personalized or "niche" content. These audio applications build a profile of a listener's musical preferences by recording details of tunes listened to, then logging their characteristics in a database which provides a playlist that reflects those characteristics and that also relies on the collective listening habits of its users. Last.fm, a U.K.-based Internet music engine founded in 2002, is such a service, with 140+ AM and FM stations.
107. Another user-customized music service is Pandora—a recommendation service which plays selections musically similar to a user's tastes and further refines its selections from user feedback. In 2008, Pandora launched a mobile version on the Apple iPhone and iPod Touch and blocked access to Canadians due to copyright considerations.

### **3.5.2 Web radio: The Business Challenge**

108. Historically consumers have expected that radio music is "free"; traditional broadcast radio has been funded by advertising. Web radio, which is innovative, novel and appealing, is in the midst of experimentation with business models. The question is: will web radio continued to be offered for "free" or will it offer enough perceived value to consumers and enough differentiation from traditional radio that consumers will pay for it?
109. Web radio is in the process of evolving towards a subscription model but there are still some providers offering the service for "free". Since the release of iPhone, Apple Inc. has stopped distributing iTunes with other manufacturers' phones in order to sell Apple Inc.'s device. Last.fm, acquired by CBS Interactive in 2007, as a potential launch point for growth into media other than music, initially offered custom audio for free, but has, as of March 2009, begun charging a monthly subscription in most countries where it is available. Webradio's business model will be heavily dependent on the evolution of the rights market.
110. The sale of music by subscription is a challenge for these and other audio providers and draws an audience to consumption of audio outside the conventional broadcast system—an audience which has become accustomed to having a "free" service.
111. New forms of marketing have emerged to "spread the word" in which audio providers encourage their customers to pass along information about their products or services to their friends, acquaintances or engage role models/trend setters to influence take-up of new services using social media.
112. With the advent of the Internet, barriers to emerging talent exposure have come down and artists now have alternate venues and opportunities to reach a growing audience accustomed to listening on-line. Artists have been able to use social networking sites and e-zines to promote themselves and new releases. Montréal-based Arcade Fire, for example, has had notable success using the Internet, blogs and YouTube to create buzz for new albums, leaking songs to social networking sites (MySpace) and releasing entire albums on the Internet. Artists are bypassing radio as a tool to break into the

industry, using new media such as Internet radio (such as last.fm) and iTunes to establish a fan base, distribute their music and find mainstream success.

### **3.6 Consolidation of access revenues**

113. Access to content and services is intermediated in Canada by two key industry groups, cable companies and ILECs offering fixed-line data, voice and subscription television. Across the country, any given residential market is served by one or both and only rarely by a third wired-facilities-based provider.
114. Wireless telecommunications services revenues are largely controlled by three entities that also control an extensive portion of the overall communications infrastructure in Canada. Several new entrants will join in the wireless access market as a result of the Advanced Wireless Spectrum auction which concluded in July 2008. A handful of MVNOs operate as well, though their ability to pose a competitive threat to the largest three is limited by reseller agreements that constrain their flexibility to offer attractively priced services.
115. As discounts are provided to quad-play subscribers with a contractual arrangement, the opportunity for new single-play entrants to gain significant market traction is challenged.
116. ILECs controlled 82.1% of wireline local and access revenues in 2008, with another 18.6% accruing to cable BDUs.<sup>44</sup> Since ISP services are generally provided over the same infrastructure owned by those two groups, it is not surprising that just 6% of residential Internet access revenue is controlled by resellers, utility telecommunications companies and other carriers.

#### **3.6.1 Television as a network driver**

117. There is a significant opportunity for cable BDUs to capture an increasing share of landline telephony revenues and customers. Non-incumbent alternative telecommunications providers saw a 37.3% CAGR in line growth between 2005 and 2008.<sup>45</sup> Though incumbent telecommunications companies are responding to a decline in residential landline share (-5.4% CAGR over the same period) with more attractive bundles, cable BDUs continue to win greater share with each passing quarter. Without a similar shift of subscription television service subscribers to their telecommunications companies' from cable BDU offerings, current shifts in the market tend to favour the latter. While this is unlikely to change pending a large-scale and expensive roll-out by telecommunications companies of the next generation networks required to offer a compelling television service, it should be noted that most large ILECs have announced plans to or have started to invest in broadband infrastructure that would enable them to better compete for triple- and quad-play customers.
118. Nearly all pay television subscriptions in Canada are to either one of two DTH companies controlled by Bell Canada and Shaw Communications Inc. or to a cable BDU. IPTV is growing as an alternative, though it is currently offered only by facilities-based telecommunications companies within their operating territories and is not currently considered to be a platform for competitive entry by non-incumbents.
119. Table 3 shows the projected growth in subscription television households. The CAGR from 2009 to 2013 for the total number of households with a subscription to a television service is 1.53%. In this same period, PricewaterhouseCoopers expects mobile television to gain momentum, commencing in 2010. While they do not provide any forecast of number of subscribers, they do project that the revenue will grow from less than U.S.\$0.5 million in 2009 to U.S.\$42 million in 2013.<sup>46</sup>

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<sup>44</sup> CRTC, *Communications Monitoring Report 2009*.

<sup>45</sup> *Ibid.*

<sup>46</sup> PricewaterhouseCoopers, *Global Entertainment and Media Outlook 2009-2013*.

**Table 3. Subscription television households (millions), 2004-2013**

	2004	2005	2006	2007	2008p	2009	2010	2011	2012	2013
Analog only Cable	5.3	5.2	5.1	4.8	4.5	4.4	4.2	3.8	3.2	2.2
Digital Cable	2.1	2.8	3.0	3.3	3.8	4.1	4.4	4.8	5.4	6.4
<b>Total Cable</b>	7.4	8.0	8.1	8.1	8.3	8.5	8.6	8.6	8.6	8.6
Satellite	2.3	2.6	2.7	2.7	2.6	2.5	2.4	2.3	2.2	2.1
IPTV	-	0.1	0.1	0.2	0.2	0.2	0.3	0.5	0.8	1.2
<b>Total Subscription TV</b>	9.7	10.7	10.9	11.0	11.1	11.2	11.3	11.4	11.6	11.9

Source: PricewaterhouseCoopers, *Global Entertainment and Media Outlook 2009-2013*

120. The high concentration of residential telecommunications and video distribution revenue and access points in the hands of largely two main providers in most regions—a cable company and telecommunications company—has potential implications for the evolution of a competitive marketplace for these services. While the threat of competition has a disciplining effect on incumbent behaviour, the reality of non-facilities-based competition is such that for the majority of consumers, alternatives are not considered compelling. Without the flexibility to meaningfully reduce prices below those offered by the incumbent facilities-based entities or employ other meaningful differentiators, alternative providers are unlikely to gain any significant traction in the short-term.
121. Though the Commission has pursued a regime of facilities-based competition that unbundles or makes available for resale the telecommunications company provided and cable company owned network elements which are required to offer competitive services, it seems unlikely that in the short- to mid-term, the most sophisticated bundles of Internet/phone/television (the “triple play”) will be offered by any other than the incumbent facilities-based providers.

### 3.6.2 Internet Bundles

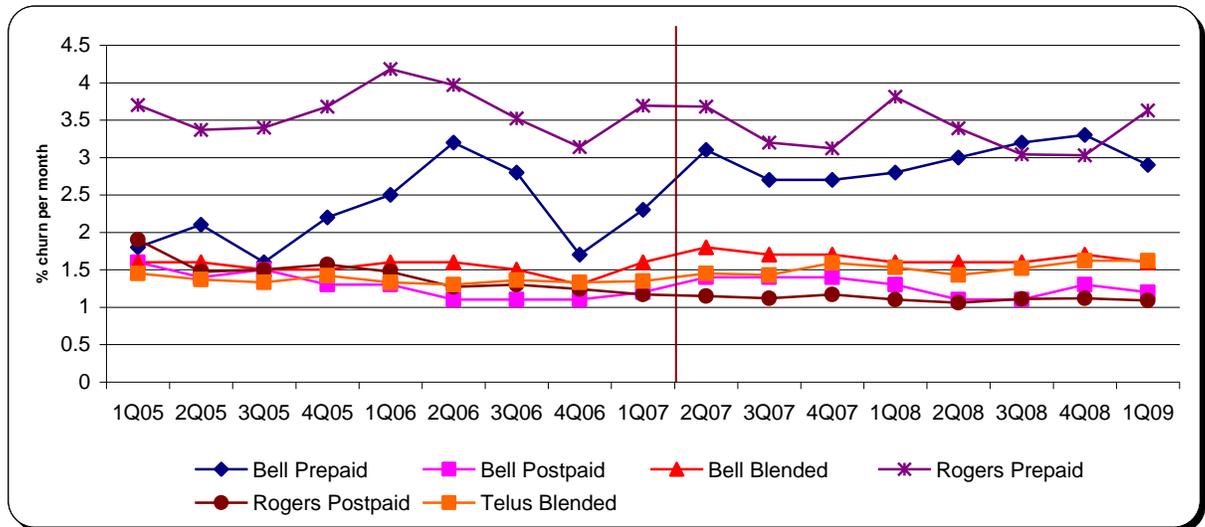
122. As Canadian consumers respond positively to bundled offerings, competitor inability to offer triple- and quad-play services has the potential to entrench the dominant position held by incumbent facilities-based providers. At year-end 2008, approximately 25% of residential accounts included service bundles with at least two of local, Internet, video or mobile services. This number is relatively unchanged from 2007.<sup>47</sup> Bundles are a key competitive weapon in the effort to secure long-term customers since customers who subscribe to bundles are at a lower risk of churning than single-customers. Previous Commission management of the terms and conditions of those bundles and restrictions on product marketing and pricing are now largely removed across much of the country.<sup>48</sup>
123. While bundles are just beginning to become an important part of service providers’ retention strategies and adoption by the addressable market in the mid-term is still a question, there are indications that the contracts associated with them work well to mitigate churn, enabling service providers to maintain a level of margin in their access products.
124. For example, since the implementation of wireless number portability (thought by some observers to be a precondition to greater consumer dynamism) in the first quarter of 2007 there has been little discernible effect in the marketplace, certainly among the bulk of customers subscribed to postpaid (contract-based) wireless plans. The chart below demonstrates the absence to date of any effect on churn levels among the three

<sup>47</sup> CRTC, *Communications Monitoring Report 2009*. In this case, the components of the bundle are phone service, Internet service, wireless, and television. Service providers may include other items in bundles such as long distance or calling features, but these are not included in this figure.

<sup>48</sup> At the time of writing, applications had been received for 80% of all network access services (NAS). Forbearance has been approved in exchanges representing 77% of residential NAS and denied for exchanges representing 3% of all residential NAS.

largest providers (note that Rogers Communications Inc. ceased providing a blended churn figure in 2006, while TELUS Communications Inc. has during the period provided only a single blended figure).

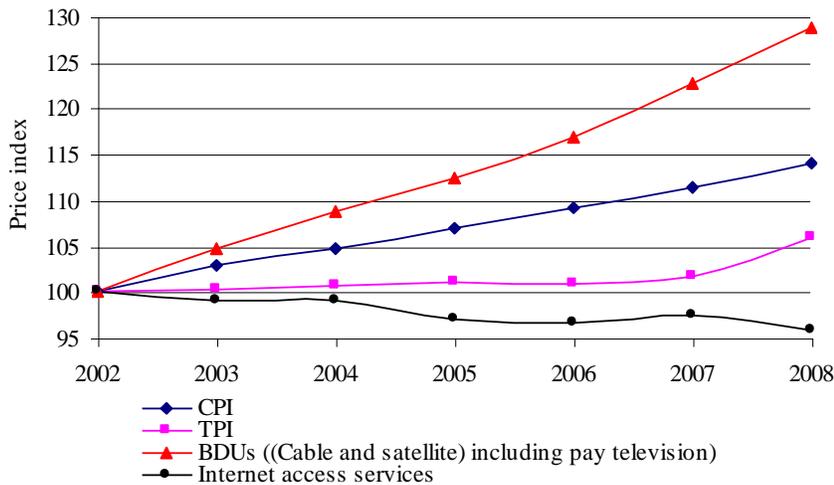
**Figure 6. Average monthly churn, pre- and post-WNP, BCE/Rogers/TELUS**



Source: Public company reporting, 4Q08/1Q09 TELUS Communications Inc. reporting of adjusted data due to analog network shutdown

125. It should be noted that the rise of single service provider consolidation has taken place in conjunction with rising broadband penetration. While the initial market for dial-up Internet services was marked by intense competition among a wide variety of providers, ranging from the behemoth AOL Inc. to “mom-and-pops,” the heavy investment in facilities required to offer broadband service or conversely the establishment of a viable model for re-sale of a facilities-based provider has meant markedly less competition, as outlined above, for broadband. The decline of dial-up, which now stands at roughly 9% of Internet-using households, down from 37% in 2003, has been well documented in conjunction with rising demand for rich media, IP voice telephony and the ability to transfer large documents. This decline in dial-up has been occurring at a CAGR of 27% since 2003, with no signs of slowing. Since broadband access is available to 94% of households in the country and many households will not subscribe at all to Internet through the mid-term, it can be assumed that dial-up will likely fall further, having the effect of removing from the market more, primarily small providers who offer only dial-up access.
126. Although it requires further study, it appears that bundling strategies are having the effect of enabling service providers to maintain price levels. The following figure demonstrates that, with the exception of Internet pricing (which has fallen slightly), telephone and BDU pricing has been on an upward trajectory in comparison with the overall consumer price index.

**Figure 7. Price indices – telephone price index (TPI), BDU (cable and satellite including pay television), Internet access services and consumer price index (CPI)**



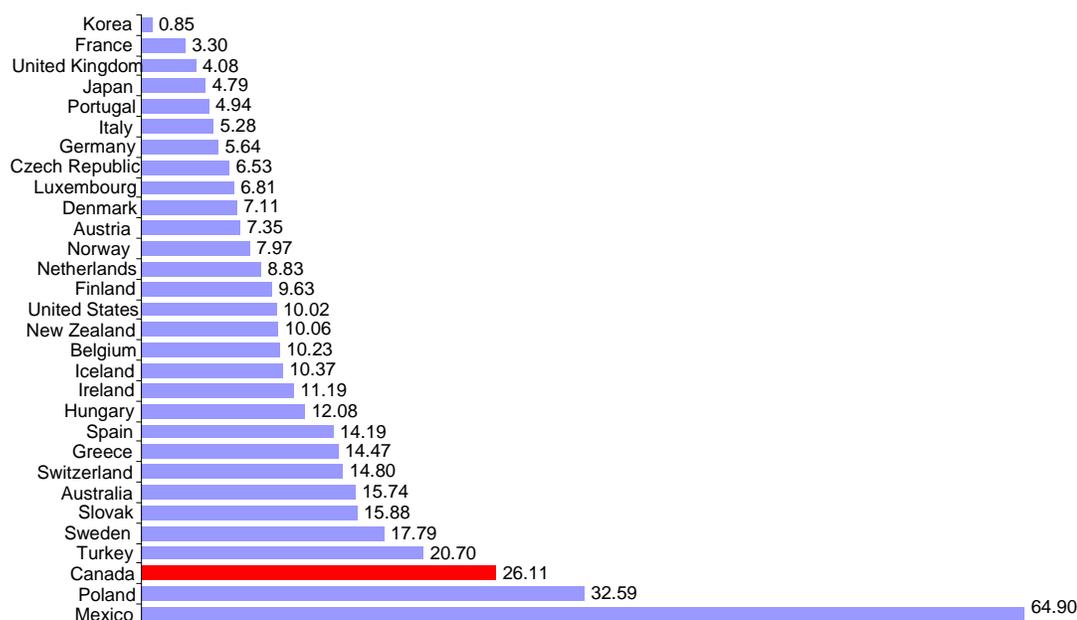
Source: Statistics Canada

127. Facilities-based competition may be on the horizon in the mobile wireless sphere. Established providers in one region will use wireless to compete out of their traditional incumbent territory. New entrants are widely assumed to have the resources necessary to provide a compelling alternative to the existing three facilities-based wireless service providers. With new entrants in the mix, there will be competitive pressure to reduce prices and offer greater value to consumers. This outcome would fulfill the stated goal of introducing competition by reserving spectrum for new entrants.<sup>49</sup> This is expected to be mitigated, however, by the continued popularity of bundles and continued contract provisions.
128. The continued challenge to the ILEC and cable provider dominance of revenue is less likely to originate from domestic competitors than from over-the-top<sup>50</sup> content providers, and the risk they pose to the incumbents with respect to disintermediating them from the content value chain. Multiple analysts and observers have noted the potential for content providers that are also access providers—cable companies are the clearest example—to lose valuable content and voice revenues as consumers use those pipes to build customized content packages using over-the-top content.
129. Observers have asserted that the concentration of broadband revenues accruing to ILECs and cable providers has the effect of keeping consumer prices higher than they might otherwise be. This is borne out in cross-OECD comparisons of broadband pricing. Among the most dramatic of the various comparisons is that of average broadband monthly price per advertised Mbps as measured in U.S. dollars, adjusted to purchasing power parity (see figure 8).

<sup>49</sup> <http://www.ic.gc.ca/eic/site/ic1.nsf/eng/04175.html> , 15 companies bid almost \$4.3 billion for licences for new wireless services.

<sup>50</sup> Over-the-top television is television programming, movies, and video clips delivered to the consumer via the internet (broadband), bypassing traditional cable and satellite providers.

**Figure 8. Average broadband monthly price per advertised Mbps, Oct 2008, U.S.\$ PPP**



Source: OECD

### 3.6.3 Threat of disintermediation

130. Disintermediation poses a threat to large communications companies whose revenues are derived from both the access to distribution networks and the aggregation of content and voice offerings offered on those networks. Alternative ecosystem vendors such as Apple Inc. are achieving market success by selling devices, content and services that are substitutable for some high-value services offered by the incumbent communications companies—including voice, audio and audio-visual services. In the long-term, it is possible that consumers will come to rely less on the aggregation services offered by cable companies, for example, choosing to subscribe to fewer and fewer high-value services in favour of simple Internet access—the oft-cited threat. It should be noted, however, that the broadcast distributors have foreseen the threat and are planning to leverage the Internet as an alternative way to distribute programming content; for example, in November 2009, Rogers Communications Inc. launched a broadband television portal where subscribers can access broadcast content online regardless of who their Internet provider is.
131. Television providers, in particular, have identified the potential in the long-term for audiences to significantly shift their viewing habits, consuming greater levels of unregulated content travelling over open mobile and Internet networks and not relying on distributors. For at least the mid-term, however, these service providers may be mostly a complement to the subscription services offered by incumbent facilities based providers. As explored earlier, the current rights market provides exclusivity to those incumbent providers for the provision of high-quality professional content that will remain in high demand through the foreseeable future. It is likely that Canadians will continue to rely upon cable and DTH (and increasingly IPTV) to deliver that high-quality content. Growing demand for HD content will solidify the role of facilities-based providers as over-the-top delivery of HD content presents many challenges.
132. The following table demonstrates that the largest facilities-based “quad play” companies, Rogers Communications Inc. and BCE Inc., have become highly dependent on access revenues. For Rogers Communications Inc. especially, these

revenues are largely associated with wireless, but ISP and voice revenues are nonetheless significant. As access to the Internet, voice and wireless become increasingly commoditized, these quad-plays could see significant declines in revenue as consumers seek the lowest pricing. This would have the greatest impact on companies using access technologies that do not have significant value-added potential.

**Table 4. Large “quad play” communications companies’ revenue centres, FY2008**

		BCE <sup>51</sup>	TELUS <sup>52</sup>	QMI <sup>53</sup>	Rogers
Revenue (\$millions)	Phone	\$6,348	\$2,637	\$286	\$514
	Wireless	\$4,553	\$4,660	\$32	\$6,335
	Internet	\$4,319	\$2,072	\$500	\$695
	Broadcasting	N/A	N/A	\$437	\$1,495
	Distribution	\$1,450	unavailable	\$810	\$1,669
	<b>Total incl. other than above</b>	<b>\$17,698</b>	<b>\$9,653</b>	<b>\$3,730</b>	<b>\$11,335</b>
Subscribers (thousands)	Phone	7,436	4,246	852	1,055
	Wireless	6,497	6,129	63	7,942
	Internet	2,054	1,220	1,070	1,582
	Broadcasting	N/A	N/A	N/A	N/A
	Distribution	1,852	unavailable	1,716	2,320

Source: Corporate Annual Reports

### 3.7 Mobile/wireless landscape and outlook

133. The advent in the mid-to-late 1990s of affordable personal wireless telecommunications—specifically first generation-digital-based Personal Communications Services as an evolution from analog-based networks—ushered in a new era of communications. Early digital voice technology has evolved over the course of a decade to become a multimedia offering with rich voice, text and multimedia content. The introduction of touchscreen smartphones,<sup>54</sup> that work on very high-speed wireless networks, commencing in 2007, has the potential not just to further disrupt the business model created by traditional landline providers for voice service, but also to deliver entertainment and information content. The combination of always-available, high-speed data connection, touch-screen technology and mobile applications and stores for web-based applications is expected to significantly transform the mobile communications ecosystem. The 2008 Lemay-Yates Associates Inc.’s *Report on Mobile Broadband in Canada* indicates that close to one third of handsets offered under the major carrier brands have HTML browsing capabilities. They note further that for mobile data users, browsing the Internet is the second-most widely used data application. As these devices continue to evolve, including better software support for rich Internet applications, and as more websites provide both mobile-specific applications and better optimization of their websites for mobile devices, the user experience of browsing the Internet using a mobile handset will improve. Touch-screen technology, which enables users to interact with what is displayed directly on the screen rather than indirectly with a mouse or touchpad, may ultimately provide a better

<sup>51</sup> BCE reports Bell Canada and Bell Aliant separately. These have been combined as appropriate. The figure noted for internet revenue was reported as data revenue by BCE and includes data and internet solutions for enterprise and business customers as well as consumer internet revenues services.

<sup>52</sup> TELUS Communications Inc. does not report revenues or subscribers to distribution services. “TELUS TV” Presumed to be negligible.

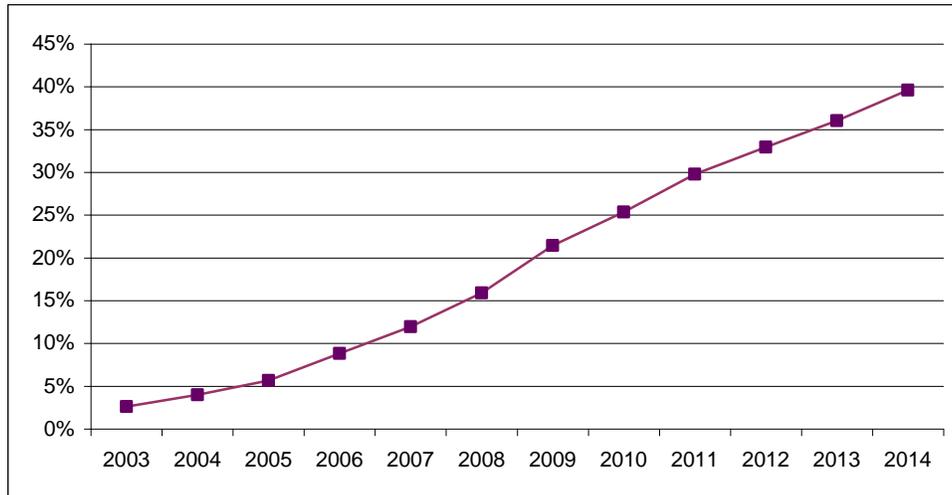
<sup>53</sup> Quebecor Media Inc. segments Interactive Technologies and Communications separately. Revenues were \$89.6 million in 2008. Internet portal revenues are reported under the newspapers segment, and are not included.

<sup>54</sup> A smartphone is a mobile phone offering advanced capabilities, often with PC-like functionality such as e-mail, phone, Internet access functions, entertainment, and PDA.

user experience than a traditional computer with a fixed high speed Internet connection for some applications. Further analysis of the smartphone market follows below.

134. As of 2008, 74.3% of Canadian households had subscribed to wireless services.<sup>55</sup> While subscriber growth has slowed, the growth in data revenue has remained strong. ARPU grew from \$49 per month for wireless services in 2004 to \$60 per month in 2008. Analysts credit much of the growth to increases in data usage for such services as e-mail, text, web surfing and, increasingly, the delivery of audio and audio-visual content.

**Figure 9. Data ARPU as % of ARPU (BCE, TELUS, Rogers blended)**

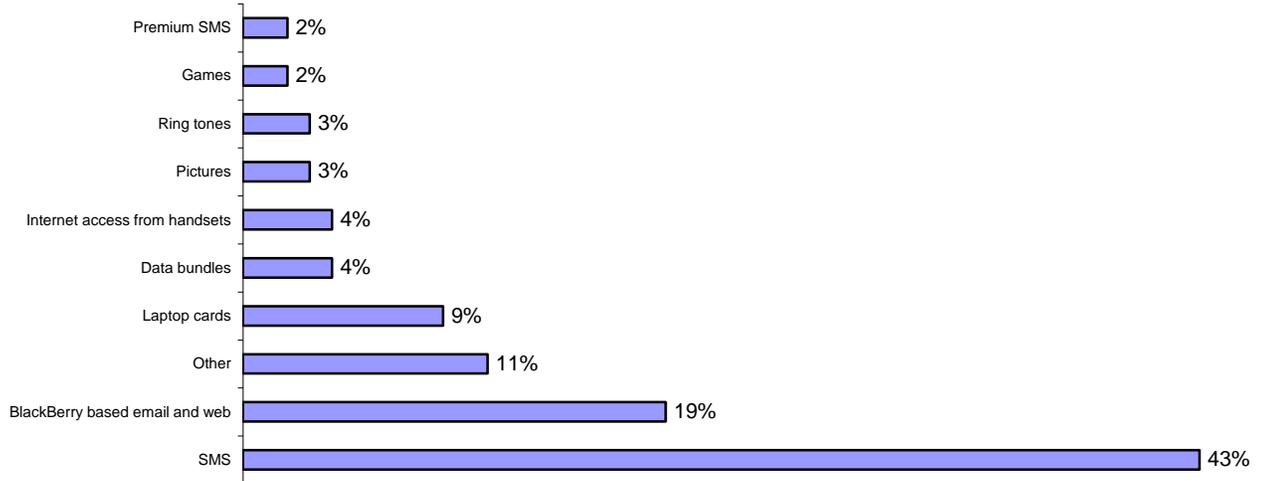


Source: UBS estimates, April 2009

135. There is room for significant continued growth in data use and penetration. PricewaterhouseCoopers has projected that mobile Internet access will drive revenues in Canada from an estimated U.S.\$255 million in 2009 to U.S.\$1.35 billion in 2013. This is derived from a subscriber base accessing the Internet using mobile devices that will rise from an estimated 1.4 million in 2009 to 8 million in 2013. Importantly, the average monthly spending on mobile Internet access will fall from U.S.\$15.01 to U.S.\$14.07 over the same period. This decrease in price, reflecting more generous data plans offered to subscribers, should drive the usage indicated by PricewaterhouseCoopers. Unlimited data plans have become more common in the United States—iPhone users with AT&T Inc. automatically receive unlimited data with their voice plans (at a price higher than for voice alone).
136. Data is not available for the Canadian marketplace in isolation, but a study of wireless service providers globally indicates that data revenue is made up largely of SMS revenue.

<sup>55</sup> CRTC, *Communications Monitoring Report 2009*.

**Figure 10. Postpaid data revenue**



Source: PricewaterhouseCoopers, *2008 Global Wireless Industry Survey*

137. Competition in the Canadian wireless arena as a result of the AWS spectrum auction, which raised \$4.25 billion dollars, has the potential to reduce pricing (potentially to the level of unlimited data options in the U.S., with much larger “buckets” of voice minutes than is currently available) and accelerate adoption of mobile data services.
138. In the AWS auction, several significant and well-funded new entrants acquired spectrum that will be used to provide voice and data services, including the delivery of audio and audio-visual programs. Some observers consider that the wireless industry will continue to be subject to consolidation and that in the long-term, some of the new entrants will disappear or be acquired. Despite the introduction of new entrants with significant wireless spectrum, the largest incumbent quad-plays continue to control a wide swath of frequencies across all of the most important allocations. One company, Rogers Communications Inc., controls spectrum in all of the major communications radio-frequencies (see table 5).
139. There is the potential, supported by anecdotal evidence, that the largest facilities-based providers may consider using high-speed cellular data networks such as HSPA to extend their reach outside of their respective incumbent territories. For example, Rogers Communications Inc. offers a “Rocket Stick” that enables a PC to use the cellular network for data access. Early initiatives to provide consumers with PC/cellular connectivity have not been aimed at replacing fixed access.

**Table 5. Major telecommunications and broadcasting spectrum holdings**

Band	Frequency	Rogers	BCE	TELUS	MTS Allstream	DAVE	Globalive	QMI/ Vidéotron	Shaw	XM	Sirius	CTV	Canwest	CBC	Corus	Astral
MF – AM	520-1710 kHz	X										X		X	X	X
VHF – FM	88-108 MHz	X										X		X	X	X
VHF – TV	54-72 MHz, 76-88 MHz 174-216 MHz	X						X				X	X	X		
UHF – TV	470-608 MHz 614-764 MHz 770-794 MHz 800-806 MHz	X						X				X	X	X		
GSM-850	824-849 MHz 869-894 MHz	X	X	X												
L-band	1452-1492 MHz	X										X		X	X	X
AWS	1710-1755 MHz 2110-2155 MHz	X	X	X	X	X	X	X	X				X			
GSM-1900	1850-1910 MHz 1930-1990 MHz	X	X	X												
MCS/MDS	2150-2162 MHz 2500-2690 MHz	X	X													
S-band	2320-2345 MHz									X	X			X		
FWA	3450-3650 MHz	X	X	X												

### 3.7.1 Increased smartphone penetration

140. Smartphones make up the fastest growing segment among mobile devices, with worldwide sales reaching 139.3 million in 2008, up 13.9% compared to 2007.<sup>56</sup> According to Juniper Research, worldwide sales of smartphones are expected to more than double by 2013 reaching 300 million annually,<sup>57</sup> representing a CAGR of approximately 16%.
141. In Canada, growth is expected to be more modest, with IDC, a market research and analysis firm, estimating that smartphone sales will increase by only 4% in 2009, the slowest rate of growth since 2004. A combination of the economic downturn and high data rates in Canada are seen as key contributors to the slower growth in smartphone sales. Of note, IDC is also forecasting a 5% decline in the sales of traditional handsets<sup>58</sup> in Canada.
142. The increased growth in smartphone sales relative to those of traditional handsets has also contributed to increasing overall penetration of smartphones in the Canadian market.
143. Consumer demand for smartphones is being driven primarily by increased demand for multimedia applications in an environment of highly personalized mobile devices, with software applications evolving as key differentiator between devices.
144. The proliferation of multimedia applications is, in turn, being driven by the fact that vendors are increasingly opening up the operating systems on their devices in order to promote development of innovative applications. This has contributed to high satisfaction levels among smartphone users, with J.D. Power and Associates reporting

<sup>56</sup> [www.webpronews.com](http://www.webpronews.com), *Global Smartphones Sales up in 2008*, 11 March 2009

<sup>57</sup> [www.comparecellular.com](http://www.comparecellular.com), *Smartphone Sales to Reach 300 Million by 2013*, 9 March 2009.

<sup>58</sup> [www.thestar.com](http://www.thestar.com), *Rogers ups cost of BlackBerrys*, 19 March 2009.

that smartphone users are generally more satisfied with their smartphone devices compared to traditional mobile phone users.

145. On the supply side, a study by Infonetics Research released in March 2009 also noted that market penetration for smartphones in North America is being driven by accelerating HSPA deployments.
146. Smartphones have also been heavily promoted by wireless carriers, who view them as a key component in increasing ARPU. To this effect, the J.D. Power survey revealed that smartphone users spend \$97 per month on average for wireless services, almost double the \$51 average per month expenditures of traditional mobile phone users.<sup>59</sup>
147. Furthermore, according to AT&T Inc., smartphone users spend twice as much per month on service than the average subscriber. Similarly, a study by research firm M:Metrics indicated that smartphone owners are more than four times as likely as the average wireless subscriber to use the mobile web, almost 10 times as likely to use mobile search and more than 4 times as likely to use mobile social networking sites.<sup>60</sup> The result is that mobile web browsing contributes to generating advertising revenues, making the business models for mobile applications more robust.

### 3.7.2 Wireless substitution

148. According to the CRTC's *Communications Monitoring Report 2009*, approximately 8% of Canadian households reported having a cell phone but no landline in 2008. This is a more than six-fold increase from 1.2% in 2001.
149. Using forecasts of cord cutting in the U.S. market as a proxy for the Canadian market, the number of wireless-only households may increase significantly through 2012. Morgan Stanley Research estimates of cord cutting in the U.S. market show that Canada's December 2005 rate of 4.8% was attained in the U.S. during the first half of 2004, indicating a 1.5- to 2- year lag between the Canadian and U.S. markets. Furthermore, Morgan Stanley's most conservative estimates for the U.S. marketplace shows the number of wireless-only households in the U.S. at between 18% and 22% by year-end 2009, climbing to a range of 24 to 32% by year-end 2012. These findings are in line with the results of a separate study published in September 2008 by Nielsen Media in the U.S., which indicated that 16.4% of households were wireless-only at year-end 2007, with an increase to 17.1% in June 2008.<sup>61</sup>
150. Several factors specific to the Canadian wireless market may slow the trend towards wireless substitution. Chief among these factors is that Canada's wireless rates, particularly when combining local and long distance calling, remain high relative to those in the U.S. The lack of affordable unlimited voice and data plans on the market makes cord cutting cost prohibitive in many instances.
151. A key factor that could act as catalyst to the cord cutting trend is the introduction of additional competitors into the Canadian market as a result of the 2008 AWS wireless spectrum auction. If a decrease in the average price of voice and data services and more flexible package options result from a more robust competitive landscape, Canadian consumers would have additional incentive to replace their landlines with wireless services.
152. Additionally, as location identification capabilities become available within the wireless E911 framework, potential concerns over the loss of automatic location identification available with landline 911 services should help ease safety concerns related to transitioning to a wireless-only household.

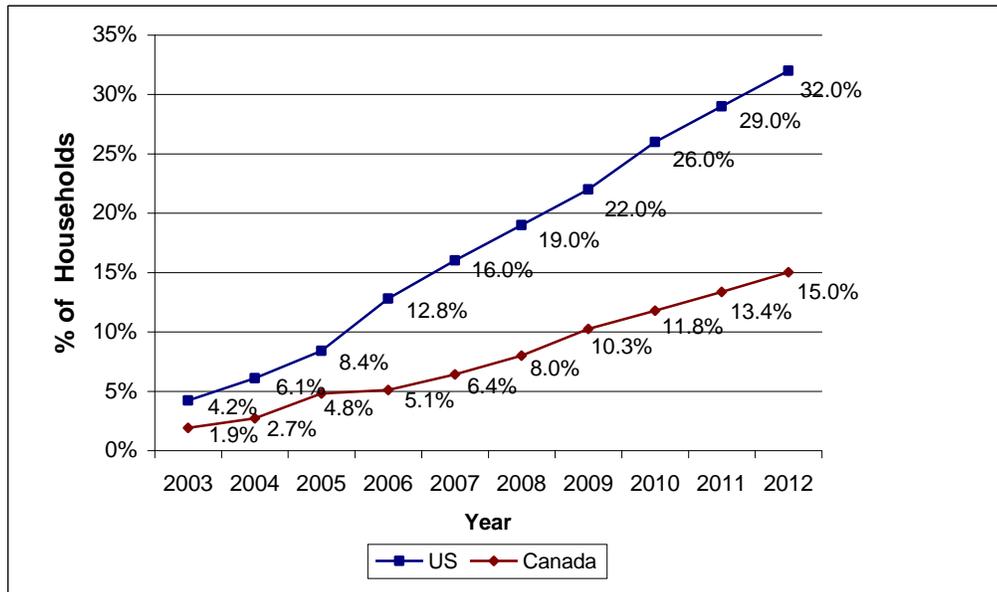
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<sup>59</sup> [www.digitalhome.ca](http://www.digitalhome.ca), *Smartphones: Not just for business anymore*, 19 November 2008.

<sup>60</sup> [www.businessinsider.com](http://www.businessinsider.com), *Smartphone Sales to Triple, Good News for Apple, RIM, Carriers*, 20 March 2008.

<sup>61</sup> The Nielsen Company, *Call My Cell: Wireless Substitution in the United States*, September 2008.

**Figure 11. Forecast of wireless-only households in Canada and the U.S.<sup>62</sup>**



153. According to the Morgan Stanley research, the following segments of the population demonstrate an increased propensity for cord cutting:
- those with well-below average incomes;
  - those within the 18-29 age demographic;
  - students away at college or university;
  - those who rent rather than own their residence;
  - those with unrelated housemates without children; and
  - those who live in urban areas.
154. According to the Nielsen study, the economic downturn is seen as a key driver of cord cutting as consumers look to decrease expenses. Although average landline costs are \$40 per month, total savings are slightly offset by the fact that wireless substitutors use a greater number of wireless minutes and spend more per month on average for wireless services, leading to an average wireless-only household savings of \$33 per month.
155. Among other interesting findings of the Nielsen study is the fact that wireless substitutors are greater adopters of wireless Internet connectivity, leading Nielsen to consider Internet access as the “next frontier” of wireless substitution.
156. Interestingly, Nielsen concludes its study by stating that there is a “new segment of the population who is choosing a different home communications and entertainment framework” and that “traditional landline companies can try to combat this trend on cost, but the tide is against them.” They further indicate that the traditional battle for the phone line, living room and PC connection is over, and that today’s broader customer

<sup>62</sup> U.S. forecast is from Morgan Stanley Research, *Telecom Services – Cutting the Cord: Wireless Substitution Is Accelerating*, 27 September 2007; Canadian data from 2003 to 2008 is from Statistics Canada’s Residential Telephone Service Survey and the projection is based on the Convergence Consulting Group’s forecast that by the end of 2015, 20% of Canadian households will be wireless-only.

relationship will be dictated by seamless connectivity, competitive pricing and a “more holistic understanding of the communications consumer.”<sup>63</sup>

### 3.7.3 Location-based services

157. With GPS-enabled mobile device penetration showing considerable growth, the business case for location-based services is strengthening. As such, wireless device manufacturers, along with service and content providers, are looking to capitalize on these key trends by partnering to introduce LBS offerings, of which the most popular include navigation, geo-social networking, emergency services, location-based advertising, mobile-commerce and enterprise services.
158. With Assisted GPS, which combines GPS technology and cellular network capabilities for improved location determination, providing the backbone for LBS, the increase in GPS-enabled mobile device penetration has been the key driver of growth. According to In-Stat, mobile devices with integrated GPS are forecast to grow from 180 million units in 2007 to 720 million units by 2011.<sup>64</sup> As a percentage of overall mobile phone sales, a study by iSuppli estimates that by 2011, 29.6% of all mobile phones shipped worldwide will have GPS, compared to 11.1% in 2006.<sup>65</sup> Other key drivers of LBS include the popularity and increasing mobility of social networking, investment and strategic partnerships by major industry players and the increasing popularity of all-inclusive data service offerings.
159. According to Gartner Inc., the total number of subscribers to LBS is expected to increase from 43 million in 2008 to more than 300 million in 2011. Revenues associated with these services are also expected to increase significantly, from U.S.\$485 million in 2007 to more than U.S.\$8 billion in 2011.<sup>66</sup>
160. In order to realize the vast potential of LBS, providers will need to address certain key challenges, including the protection of private customer location information, offering advanced levels of customization in order to maximize the relevance of location-based advertising to customers, as well as overcoming indoor location identification challenges.

### 3.8 Business market competition

161. While this report is predominantly focused on considerations in the residential market, the following is a high-level overview of the competitive environment in the business market. Within the business telecommunications market, there is a high level of competition, especially for medium- and large-enterprise business, among incumbent providers, out-of-territory ILECs, resellers, utility companies and even systems integrators and information and communications technology providers that offer managed network solutions. It bears keeping in mind that this competitive environment exists chiefly among two or three large players and that few, if any, service providers can serve the largest enterprises with locations across Canada entirely on their own facilities and must also use leased facilities. Figure 12 shows the distribution of revenue from data and private line services across different sizes of business customers. It seems unlikely that this competitive dynamic will change meaningfully in the mid-term unless corporate convergence occurs. Most business lines have been forborne (68%

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<sup>63</sup> The Nielsen Company, *Call My Cell: Wireless Substitution in the United States*, September 2008.

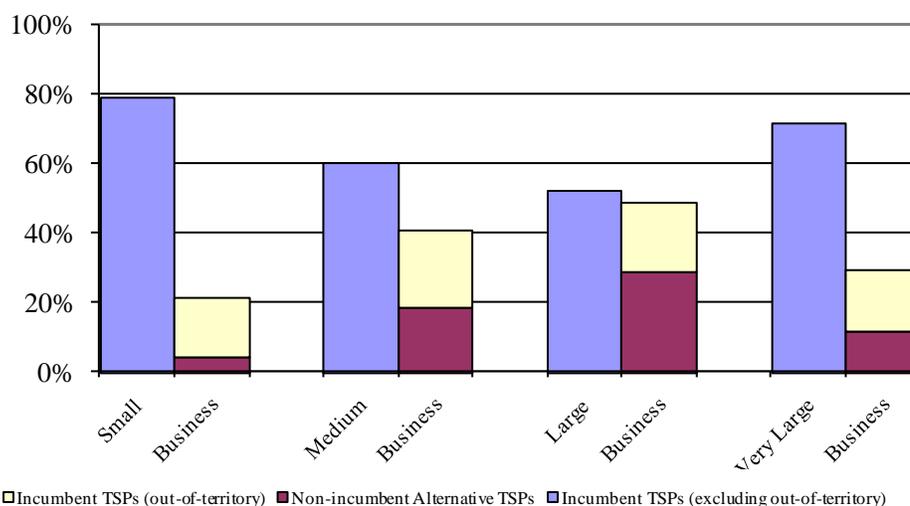
<sup>64</sup> <http://qigaom.com/2008/02/06/location-based-advertising/>, *Are You ready for Location-Based Advertising*, February 2008.

<sup>65</sup> <http://www.informationweek.com/news/mobility/showArticle.jhtml?articleID=202801218>, *GPS-enabled mobile phones to quadruple by 2011*.

<sup>66</sup> <http://telecom.tekrati.com/research/10077/>, *Worldwide Location-Based Services to Grow Nearly 170 percent in 2008*, says Gartner, 14 February 2008.

versus 13% for which forbearance was denied and 19% for which no applications have been made).

**Figure 12. Data and private line service revenue distribution: incumbent TSPs, incumbent TSPs (out-of-territory) and alternative TSPs<sup>67</sup>**



162. It is interesting to note that non-incumbent TSPs are winning market share in the provision of newer protocol data services such as Ethernet and IP-VPN (table 6). Revenue from legacy data services (for example, X.25, Asynchronous Transfer Mode, frame relay) is shifting to the new protocols, as is the private line revenue. This trend is expected to continue given the increased flexibility, capacity and interoperability that the new generation of IP services provide and given that they can cost effectively replicate the functionality, such as capacity and security associated with private line services. Newer data protocol service revenues increased 23%, from \$1.1 billion in 2007 to \$1.3 billion in 2008, whereas legacy service revenues declined 9.2% during this period, decreasing from \$478 million to \$434 million. Newer data protocol revenues have increased to the point where, by 2008, they captured over 76% of the \$1.77 billion in data protocol revenues.<sup>68</sup>

**Table 6. Private Line and Data services – market share and revenues**

	2004	2005	2006	2007	2008	CAGR
<b>Private Line - market share</b>						
Incumbent TSPs (excluding out-of-territory)	80%	76%	80%	73%	74%	
Incumbent TSPs (out-of-territory)	15%	17%	13%	17%	16%	
Non-incumbent alternative TSPs	5%	7%	7%	10%	10%	
Private Line - total revenue \$ (millions)	\$2,041	\$1,854	\$1,665	\$1,680	\$1,715	-4 %
<b>Legacy Data - market share</b>						
Incumbent TSPs (excluding out-of-territory)	54%	54%	59%	57%	57%	
Incumbent TSPs (out-of-territory)	31%	28%	19%	16%	12%	
Non-incumbent alternative TSPs	15%	18%	23%	26%	31%	
Legacy Data - total revenue \$CAN (millions)	\$833	\$690	\$509	\$478	\$434	-15%

<sup>67</sup> CRTC, *Communications Monitoring Report 2009*.

<sup>68</sup> Ibid.

New Data - market share							
	Incumbent TSPs (excluding out-of-territory)	70%	63%	57%	50%	61%	
	Incumbent TSPs (out-of-territory)	14%	17%	24%	29%	13%	
	Non-incumbent alternative TSPs	15%	21%	19%	21%	26%	
	New Data - total revenue \$ (millions)	\$585	\$664	\$931	\$1,125	\$1,338	23%

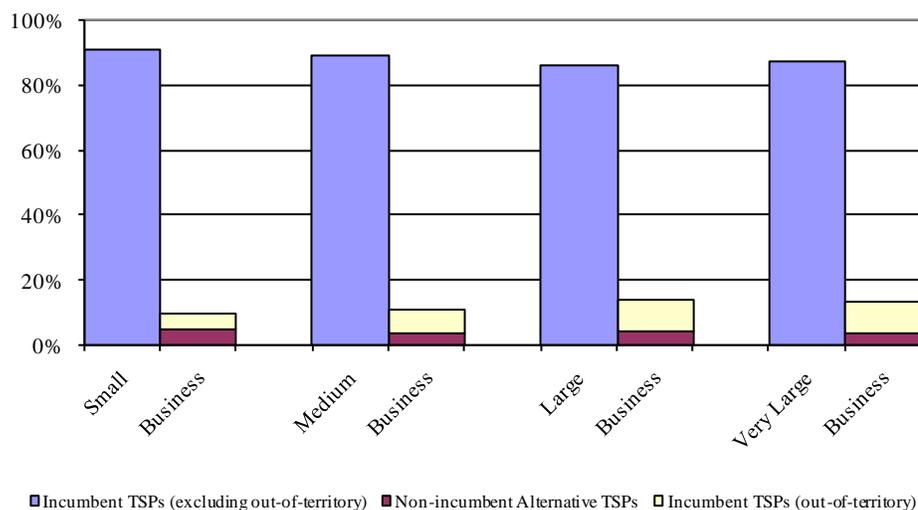
Source: Corporate Annual Reports

163. The total number of business lines decreased by 56,000 from 2007 to 2008, resulting in 6.3 million lines. Non-incumbent, alternative TSPs lost the most lines in this time period (11.1%) falling to 390,000 lines, whereas the incumbent TSPs (excluding out-of-territory) were relatively flat, gaining 0.3% for a total of 5.27 million lines. Total local business line revenue decreased slightly from \$3.58 billion in 2007 to \$3.55 billion in 2008; business long distance revenue also decreased in the same time period from \$1.30 billion in 2007 to \$1.19 billion in 2008. Incumbents continue to hold the dominant share of local business market revenues across all sizes of businesses (see figure 13) whereas they do not dominate the long distance business market as significantly (see figure 14).<sup>69</sup>

164. Unlike the residential Internet access market, where the cable BDUs have the dominant share, incumbent TSPs have the major share of the business Internet access market. 2008 business Internet access revenues of \$997 million are broken down as follows:

- incumbent TSPs (excluding out of territory)—46%;
- resellers, utility telecommunications companies and other carriers—24%;
- cable BDUs—20%; and
- incumbent TSPs operating out of territory—10%.<sup>70</sup>

**Figure 13. Local business market revenue distribution, by customer size and type of provider (2008)**<sup>71</sup>

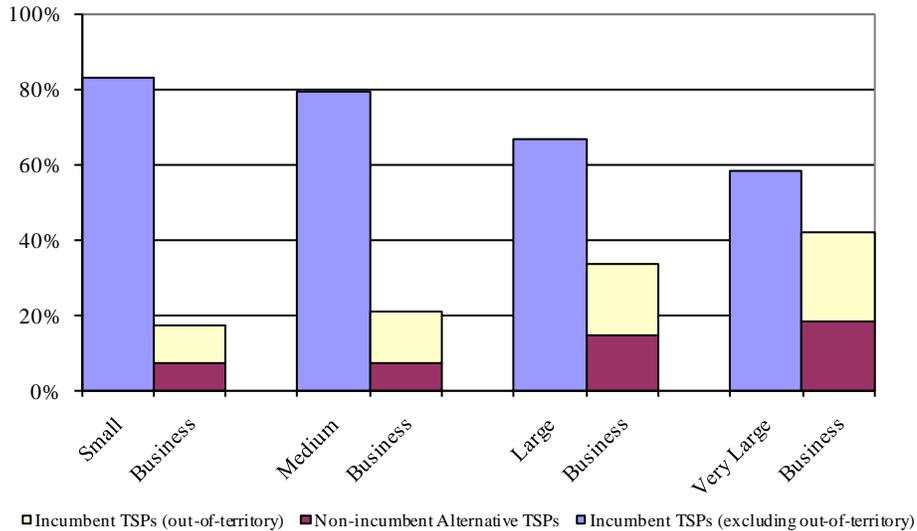


<sup>69</sup> CRTC, *Communications Monitoring Report 2009*.

<sup>70</sup> Ibid.

<sup>71</sup> CRTC, *Communications Monitoring Report 2009*.

**Figure 14. Long distance business market revenue distribution, by customer size and type of provider (2008)<sup>72</sup>**



### 3.9 Next generation access

165. Current fixed access networks, including the commonly deployed ADSL and DOCSIS 2.0 transmission protocols for delivering last-mile connectivity, are expected to be replaced throughout the period under study by higher-bandwidth delivery networks or NGAs.
166. NGAs are those that provide very high rate broadband access and transport using means other than ADSL for last-mile delivery. Examples include last-mile delivery via VDSL, FTTH, FTTN/VDSL and DOCSIS 3.0 solutions.

#### 3.9.1 Telecommunications companies

167. FTTN services deliver Internet services at a very high rate (up to ~50 Mbps in currently envisioned VDSL deployments) by extending fibre networks to nodes that are within a limited distance (ideally less than 150 metres) from the home. Last-mile access continues to be via twisted pair from the node to the home. This remaining copper-based technology will likely be upgraded to VDSL, a requirement to overcome current 12 Mbps limits.
168. This upgrade to existing VDSL/FTTN facilities will be critical if telecommunications companies are to compete effectively with their cable company rivals in-territory with a subscription video offering that has true video-on-demand capabilities and the potential for interactivity. Satellite television, currently offered by Bell Canada as its alternative to cable television distribution, is limited by lower capacity than digital cable offerings and by the lack of an integrated, high-rate return path. This limits Bell Canada's ability to offer services such as multi-stream HD IPTV services or much higher-quality Internet video streams.
169. To this end, it is expected that Bell Canada will resume its initiative to upgrade the large majority of its physical plant in the Quebec City-Windsor corridor to VDSL/FTTN over the course of the mid-term, as it had announced it would do (at a cost of around \$600 million) in 2006. That roll-out was interrupted by the company's (uncompleted) efforts to privatize. In TELUS Communications Inc.'s case, the company has not been as public

<sup>72</sup>Ibid.

with its plans, but there is anecdotal evidence of an upgrade initiative. In July 2009, Bell Aliant announced that it will roll out FTTH to the entire city in both Saint John and Fredericton, New Brunswick by mid-2010. A number of small telecommunications companies and ISPs (such as Wightman Telecom Ltd. and Huron Telecommunications Co-operative Ltd. in Ontario, XITTEL Telecommunications Inc. in Quebec and Novus Entertainment Inc. in Vancouver) currently provide FTTH.

170. It is likely that the companies will continue to build FTTH networks in greenfield developments, but there is currently no evidence that these will become the preferred technology for widespread use in the mid-term. Canadian telecommunications companies will likely keep careful watch of the Verizon FiOS initiative, which will roll FTTH out across a significant portion of its serving territory in the U.S.

### **3.9.2 Cable companies**

171. Cable companies are currently well-positioned to benefit from expanding consumer demand for video content—both by offering greater choice through traditional distribution networks and providing content over the Internet. Networks based on coaxial cable are well-positioned to benefit from developments such as Tru2Way technology which delivers server-based video on demand and has the potential for interactive advertising and non-video uses and upgrades to DOCSIS 3.0 which deliver very high-speed Internet (50 to 100 Mbps) with much less capital expenditure than is required for VDSL/FTTN rollouts.

### **3.9.3 Wholesale considerations in ILEC and cable carrier NGA resale**

172. The Commission has had in place, since the introduction of competitive telephony, a regime to encourage facilities-based new entrants, while supporting non-facilities based entities with a residential wholesale regime for the delivery of voice and data. This regime requires wholesale access by competitors to a number of network elements.
173. Telecom Decisions 2008-17<sup>73</sup> and 2008-117<sup>74</sup> refined the Commission's approach in line with the recommendations of the TPRP. The Commission determined that ADSL access service is a conditional essential service and aggregated ADSL (provided by ILECs) and third-part Internet access service (provided by cable carriers) were conditional mandated non-essential services. The ADSL services must be offered as wholesale services at speeds matching those they provide to retail customers.

### **3.9.4 Digital divide**

174. Rollout of NGAs across all areas of the country will not occur at the same rate between small systems and multiple system operators, or between rural, suburban and urban areas. According to the CRTC's *Communications Monitoring Report 2009*, 93% of Canadian households currently have access to broadband service including virtually all urban households and 81% of rural households. Internet cable systems can currently serve 89% of all Canadian households and just 60% of telephone lines can provide service at 5 Mbps or higher.
175. The current situation, which already demonstrates a significant digital divide, may be exacerbated as networks are upgraded with attendant heavy capital expenditures. Facilities owners will prioritize upgrades from existing networks to NGAs according to where population density creates the highest return on investment for sunk costs, taking advantage of economies of scale where possible. Telecommunications companies already serving a smaller proportion of Canadian households with high-

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<sup>73</sup> *Regulatory policy - Revised regulatory framework for wholesale services and definition of essential service*, Telecom Decision 2008-17, 3 March 2008.

<sup>74</sup> *Cybersurf Corp.'s application related to matching service speed requirements for wholesale Internet services*, Telecom Decision 2008-117, 11 December 2008.

speed service are faced with additional costs such as re-cabling buried or strung wire to new nodes much closer to the premises than are currently available.

176. In the mid-term, large portions of rural and suburban populations will be unserved by VDSL/FTTN telecommunication company services, and there will be a smaller proportion of rural subscribers to small systems unserved by DOCSIS 3.0 services. This will have the effect both of removing existing competition in some markets as customers demand higher-than-existing speed service and new television options, and of exacerbating the existing digital divide as some (mostly) rural Canadians are unable to take advantage of bandwidth-intensive applications such as new high-quality streaming services.

### **3.10 Corporate consolidation**

177. Slicing across the emerging issue of ensuring that broadcast programming reflects both national and local interests (of which promotion of a diversity of voices and independent production is an important component) and the issue of access to competitive telecommunications services, is the issue of corporate convergence in Canada.

178. In its January 2008 Diversity of Voices decision,<sup>75</sup> the Commission recognized that:

while this concern is largely an economic issue relating to questions of competition, issues of dominance also have social and cultural dimensions. The gate keeping powers that can result from market dominance may affect the diversity of programming within the Canadian broadcasting system. What is carried, what is commissioned, what is broadcast—these are all issues that intersect with the question of market dominance.

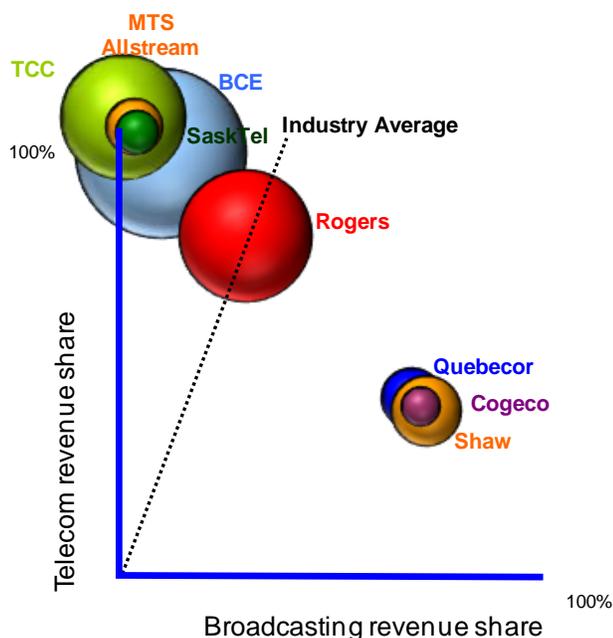
179. The largest Canadian communications companies engage in content production, broadcasting, broadcast distribution and telecommunications access. In 2008, 80% of communications revenues in Canada were generated collectively by eight communications companies that provided both broadcasting and telecommunications services. The radio industry included five large companies that collectively had 70% of the commercial radio revenues and 54% of the total national listening hours. Four of these companies (CBC, CTVglobemedia Inc., Corus Entertainment Inc. and QMI) had between 10% and 21% of the radio revenues and the remaining one had less than 10%. The four companies were also among the eight largest television companies in Canada; these eight companies directly or indirectly controlled 97% of all television revenues and had 88% viewing share of all households tuned-in. The broadcast distribution industry had five large companies that captured approximately 90% of the broadcast distribution revenues and 82% of all subscribers.

180. The following diagram represents the revenue makeup and relative revenue magnitude of these companies. The size of the bubble represents the size of the company's revenues while the bubble's position shows the extent of each company's telephony versus broadcasting revenues. The closer the bubble is to the "Broadcasting revenue share" axis, the more the company generates revenues through broadcasting activities; the closer the bubble is to the "Telecom revenue share" axis, the more the company generates revenues through telecom activities.

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<sup>75</sup> *Regulatory policy – Diversity of Voices*, Broadcasting Public Notice 2008-4, 15 January 2008.

Figure 15. Select Canadian communications companies' revenue composition<sup>76</sup>



181. In-house content production arms produce multiple forms of content that are carried by television and radio broadcasters owned in many instances by the largest distribution companies (including DTH, cable and IPTV companies). True vertical integration, however, is not the dominant form.
182. Rogers Communications Inc., the largest of the vertically-integrated communications companies, controls 5.8% of all television viewing (or 8.3% of all viewing in the Canadian English-language market), has a 21% share of subscribers to a BDU, and a 9% share of national radio listening hours. Rogers Communications Inc. is also a major player in telecommunications, providing wireless, Internet and local telephony services.
183. By contrast, CTVglobemedia Inc., the largest broadcasting company, which leverages news, sports and popular foreign programming, is not controlled by minority shareholder BCE Inc., and should be considered largely independent of the largest telecommunications companies. Canwest Global Communications Corp. is its largest rival, and is also independent of the telecommunications providers. Combined, those two entities had a total share of 41.8% of Canadian television viewership across both conventional and discretionary services. These companies are more significant players in the Canadian English language market, capturing a combined 56.2% share; of the two, only CTVglobemedia Inc. has a significant share—8.2%—of the Quebec francophone market. Canwest Global Communications Corp. also controls a significant print business through its ownership of the National Post and the former Southam newspaper chain.
184. In Quebec, QMI is significantly more integrated, controlling the large Sun newspaper chain, the TVA network and several specialty television stations. Its Videotron cable distribution business has aggressively pursued a fast-growing share of wireline

<sup>76</sup> CRTC, *Communications Monitoring Report 2009*.

telephony customers, in addition to being the dominant television provider in Quebec. It has also won sufficient spectrum to offer AWS. The company's television broadcasting services had a 29.7% share of total tuning to French-Canadian services in 2007 to 2008. QMI has also launched an online broadcasting portal—Sun.TV—which can be expected to feature prominently on future wireless platforms.

185. Shaw Communications Inc., a company owned and controlled by the Shaw family, is a diversified communications company whose core business is providing broadband cable television, high-speed Internet, digital phone, telecommunications services (through Shaw Business Solutions) and satellite direct-to-home services (through Shaw Direct). Corus Entertainment Inc., a separate company also under the ownership and control of the Shaw family, operates radio and television services in Canada. The television business also includes Nelvana Limited, a Corus company, one of the world's leading creators, producers and distributors of children's programming. Like Vidéotron Ltd., Shaw Communications (through a subsidiary) also recently won AWS spectrum that can be used to provide new mobile video and audio services.
186. While the lion's share of English-language television broadcasting revenues in Canada are largely divorced from the rest of the content value chain and are in the hands of Canwest Global Communications Corp. and CTVglobemedia Inc., which are predominantly content producers and broadcasters, it is difficult to discern the role of market forces in shaping the current structure. Under current regulatory structures, there are provisions for minimum levels of independent production for broadcasters and affiliation rules with respect to carriage of signals by distribution undertakings. As Corus Entertainment Inc. noted in its response to the Competition Policy Review Panel in 2008, the natural tendency of companies would otherwise be toward vertical integration.
187. Industry analysts have been speculating about a BCE and TELUS Communications Inc. merger. With the new wireless carriers resulting from the AWS auctions starting operations soon, the major ILECs may come together to compete against them. RBC Dominion Securities Inc.'s Jonathan Allen said in a report on 12 August 2009, that "Faced with cyclical and secular pressures on the top-line, we believe that a BCE-TELUS merger is increasingly likely in the coming year or two as both companies look to cut costs and sustain margins. There is only so much cost-cutting that can be achieved individually. The scale benefits from a merger of BCE and TELUS are substantial." He stated that synergies would be used to save over \$1.2 billion annually. Analysts also point to their increased co-operation in developing the HSDPA<sup>77</sup> infrastructure and possibly the LTE network as another sign that a merger is possible.
188. Standalone broadcasters may re-evaluate the value of OTA channels. The vast majority of Canadians—90%—subscribed to a BDU for programming services in 2008. In the mid-term, it is likely that OTA broadcasters will increasingly rely on distributors for the widest possible access to audiences. Broadcasters may find themselves better positioned if they integrate more closely with a BDU or if they take on the role of gatekeeper to the Internet content.

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<sup>77</sup> High-Speed Downlink Packet Access (HSDPA), which allows networks based on Universal Mobile Telecommunications System (UMTS) to have higher data transfer speeds and capacity, is an enhanced 3G (third-generation) mobile telephony communications protocol in the HSPA family (also coined 3.5G or 3G+).

## 4.0 REGULATORY IMPLICATIONS

189. It is clear that digitization of content such as voice, data, audio and video combined with the capability to deliver that content to consumers via alternative or non-traditional means, such as the Internet, are resulting in the convergence of telecommunications and broadcasting. The trends outlined in the preceding sections illustrate some of the impacts of convergence on the Canadian communications landscape. It is difficult to predict how these trends may evolve over time with any certainty. New technologies, consumer tastes, business demands and public policy will shape market directions; current trends could be accelerated, slowed, reversed or otherwise altered by the evolving communications landscape. The regulatory implications described below are based on extrapolating the trends as a whole, rather than examining each trend in isolation.
190. The Acts governing telecommunications and broadcasting, respectively the *Telecommunications Act* and *Broadcasting Act*, were enacted before convergence and as a result, each sphere is regulated independently. The changes resulting from convergence have created areas of overlap and ambiguity between the spheres, as well as resulting in new communications services for which the Commission has, to date, chosen to exempt from regulation. Regulation that may, deliberately or not, have the effect of perpetuating less tenable undertakings while restraining the development of desirable and innovative alternatives needs to be carefully thought out in order for the Commission to meet its legislative objectives. Moving forward, a holistic approach to regulation across both broadcasting and telecommunications will be required or, at a minimum, a systemic understanding of the impacts, present and future, of regulatory decisions in one area on other, previously unrelated, areas. Understanding the trends is critical to achieving such a regulatory strategy.
191. Taken as a whole, the trends fall into two fundamental themes: fragmentation and consolidation. Fragmentation, the increasing volume of content, application and services, is mitigated to some extent by consolidation, the vertical and horizontal consolidation of service and content providers in the market. At a minimum in the mid-term, these trends can be expected to compel the regular review of policies and regulations in light of the changing environment. It behooves the Commission, in designing its regulatory approach and measures going forward, to seek to identify where the business interests of Canadian communications undertakings are likely to naturally intersect with being recognizably Canadian and with spending within Canada. The Commission needs to understand how its measures stimulate activity in the communications marketplace. Where business interests and policy interests are divergent, regulations may need to be revised or created to ensure that the Canadian communications industry continues to meet the policy objectives.

### 4.1 Fragmentation

192. Increasing fragmentation—the steady erosion of audiences and customers to multiple sources of substitutable products, services, content and applications delivered by domestic and international providers that may be inside or outside of the regulatory environment—may require a re-examination of the current *ex ante* regulatory approach that balances access to the system with corresponding obligations. This is intensified by the greater consumption of broadcasting content from outside the regulated system via the Internet.

#### 4.1.1 Fragmentation and broadcasting regulations

193. The implications of fragmentation can be illustrated using the current regulatory approach to the licensing of both radio and television broadcasters. Currently, the licensing is based on the scarcity of spectrum and gatekept distribution access. The allotment of spectrum for OTA broadcasting depends on successful application for a

broadcasting licence from the Commission. In return for access to spectrum and distribution (and, in some cases, protection from competition), the broadcaster is subject to several regimes mandating contribution to the system. These sometimes complex regimes detail minimum levels of Canadian program spending, limitations on the types of programming that may be carried, minimum levels of Canadian program exhibition including, in some cases, for news and local reflection programming, financial contributions to content development funds and benefits packages when there are mergers and acquisitions.

194. Content from unregulated non-professional sources and professional content from outside of Canada are increasingly available to Canadian consumers via the Internet in addition to traditional media. At present, over-the-top content and foreign sources are not a major threat to broadcasters—Canada remains a separate geographic rights market for the distribution of high-quality professional content; content available on the Internet is viewed as complementary to traditionally broadcast content. However, over time the content made available by unregulated sources and from outside of Canada may have the effect of depriving the regulated broadcasters of some of the advertising and subscription revenues that are the basis of many of the contributions listed above, including Canadian exhibition and expenditure rules. These obligations may become increasingly onerous if the advertising and subscriptions revenues decrease substantially; in the mid- to long-term, these obligations may become a major competitive disadvantage for traditional broadcasters. Any regulatory approaches adopted over the mid-term must be sensitive to the potential for exacerbating competitive inequities, depriving Canadians of choice or creating incentives to operate outside the regulated system.
195. Early signs of pressure may occur first in radio as described in greater detail in Appendix 2. The relatively small file sizes and streaming rates associated with music and other audio, the rapidly improving wired and wireless broadband networks and developments in syndicating localized content, may eventually require the Commission to find new levers to establish Canadian content and funding obligations on audio providers. In the near-term, demand for broadcast spectrum is high and there has been no abandonment of radio broadcasting. For the time being, radio's exceptional ability to deliver local content to audiences is a key strength. As a result, the risk of wholesale avoidance of the contribution regimes is low. However, it is important to continue monitoring the situation to see if these trends ultimately have a negative impact on broadcasters and their ability to provide support (financial and other) to Canadian content.
196. Similar to radio, no mass departure from cable, IPTV and DTH distribution is expected in the mid-term. In the longer-term, revenue growth for those providers may experience challenges. Discretionary tiers of programming may come under pressure as viewing shifts to (wired and wireless) online content and alternatively-available sources. The introduction of faster and higher capability networks including DOCSIS 3.0, FTTH, FTTN and wireless LTE may accelerate this trend from both a user behaviour and a content availability point of view. Incumbent distributors are aware of the potential threat and are rolling out next generation networks and services, including Internet portals to access content, which may position them favourably.
197. It may become increasingly difficult for consumers to justify purchasing multiple general interest services with significant overlap in programming and just a few compelling, exclusive offerings. The trend toward à la carte consumption may be facilitated by consumer electronics such as set-top boxes and smartphones that encourage users to build media libraries and result in new advertising and micro-payment business models. A migration of revenues out of regulated distributors and toward alternative systems could have the effect of reducing funding available from contribution regimes for content production and community television channels. Any reduction in that funding

could have the consequence of making Canadian programming more expensive to acquire.

198. Regulations, such as buy-through requirements and tiering and linkage regulations, or obligatory financial contributions such as local programming and production funds, may have the effect of rendering BDU offerings less attractive in comparison to alternative unregulated sources of programming. Such regulations must be carefully examined in the coming years if the unregulated players gain significant market share. Measures that encourage greater consumption of content distributed by the unregulated sector may ultimately prove counter-productive to the Commission's policy objectives.
199. Across both broadcasting and distribution, the fragmentation of audiences is likely to result in an examination of the regulations that seek to maintain specific roles for the two. Increasingly, there is a tension between vertically-integrated communications companies and standalone broadcasters. Regulations, such as those governing the sale of local availabilities by BDUs and of advertising by VOD providers seek to preserve revenues within the broadcasting system where obligations to provide local and national Canadian programming, either through exhibition or expenditure requirements, reside. It is important to note that availability of content from over-the-top providers in many cases bypass both the regulated distributor and the traditional regulated programmer; hence a double hit on the funding available for Canadian content production.
200. Over time, as the impacts of fragmentation become increasingly evident, the Commission may wish to examine whether Canadian spending and exhibition obligations should be imposed solely on pure-play<sup>78</sup> broadcasters and whether financial contribution to program subsidies should be solely an obligation on distributors. Technological advances are likely to increasingly blur the lines between broadcaster and distributor; obligations should be considered in the context of multi-platform programming. The large, horizontally and vertically integrated communications companies that offer television content, distribution, telephony, Internet and wireless services are increasingly the beneficiaries of shifting consumer spending. Ultimately, they may be the best-placed to carry the banner of Canadian programming obligations. Any shift in obligations, however, must be carried-out in the context of the caveats discussed above. The whole of the obligations must be considered with a view to achieving the greatest possible symmetry between unregulated and regulated systems.

#### **4.1.2 Fragmentation and telecommunications regulations**

201. In the realm of telecommunications, fragmentation is demonstrated in a proliferation of services and providers increasingly offering competition to established services. As outlined in this report, this has taken two forms: competition to established providers by facilities-based challengers and over-the-top providers. Voice telecommunications has become a more complex playing field, with the product market coming to including 'plain old telephone service' (POTS) and POTS resellers, PSTN-enabled VoIP services, VoIP services that operate outside the PSTN, instant messaging services that include voice, voice communication within applications such as games and social network services and more.
202. The traditional regulatory bargain with incumbent telecommunications companies, struck in the era before competition, includes the obligation to provide universal service with a basic service objective and price regulation to ensure affordability in return for a degree of protection from competition. This understanding has already been subject to considerable pressure as the result of liberalizing traditional local and long-distance services. Incumbent TSPs, for example, continue to be subject to the obligation to serve even as new entrants such as cable companies, who are exempt from the

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<sup>78</sup> Pure-play is a term generally used in marketing to indicate that a company is specializing in one area to the exclusion of other market opportunities.

obligation, make significant in-roads into wireline voice with their VoIP offerings. Legacy rules that differentiate between incumbent telecommunications entities and new telephony providers, such as cable companies, may come under increasing pressure. As telecom companies lose considerable market share to cable companies for telephony service with market share approaching parity in some markets and consumers substituting wireless for wireline, rules that obligate only the ILECs to provide service may be considered asymmetric and may require re-examination.

203. The emergence of alternative service providers have also resulted in an asymmetric regulatory environment. PSTN-based telephony service providers are required to make contribution into funds to subsidize high cost serving areas and to make emergency calling (911) available but these requirements are generally not applicable to alternative peer-to-peer voice application providers. In the mid-term, there is little chance that a significant number of Canadians will abandon the PSTN as a primary communications tool, particularly for voice and emergency usage. However, facilities-based telecommunications entities have already reported declining revenues associated with such services as long-distance—attributable not just to price drops, but also to declining actual minutes of use per customer. E-mail, instant messaging, text messaging and social networking sites have the potential to replace a significant amount of voice calling as devices and applications become more commonplace. In turn, this will affect both the price customers are willing to pay for traditional services, as well as absolute usage. The full assessment of the impact of the alternative services will likely require new tools such as longitudinal consumer research studies to determine whether usage is sufficient and important enough to warrant review.

#### **4.1.3 Social policy**

204. Fragmentation should be viewed as an opportunity for Canada and Canadian companies to better participate in the global marketplace, achieving economic, cultural and social benefits. Regulatory approaches should therefore further this objective. For example, the new services and technologies that are developed cannot ignore the social needs of Canadians, particularly as the population ages and the disability trends rise. It is important to ensure that Canadians with disabilities continue to have access to services; the desire by communications companies to control costs could compromise expenditure on meeting the social needs of Canadians, as these are not necessarily viewed as profitable services. In addition, it is expected to become increasingly important to enable emergency services across new platforms as they become more popular.

#### **4.1.4 Fragmentation conclusion**

205. None of the broadcasting or telephony trends outlined in this report demonstrate that the traditional regulatory bargain will become irrelevant within the near- or mid-term. Technology trends driving fragmentation and pressure on traditional systems are relatively slow-moving. At this point, it may be premature to suggest either the extension of existing regulatory structures to new services, or the loosening of regulation on incumbent entities. PSTN, wireless and Internet communications are not completely substitutable at this time; mass audience for professional content continues to accrue almost solely to licensed radio and television services. However, extrapolating the current trends, some revenues will be driven outside the regulated system with a resulting effect on subsidy and funding regimes.
206. The Commission will have to watch these trends carefully in order to understand the extent to which revenue available for subsidy and funding regimes and to fulfill social obligations is diminishing and so as to recognize the market indicators that show when the tipping point is nearing. As various communications services become increasingly substitutable, the Commission needs to ensure that any regulations applying to these services are technologically neutral and symmetric. New policy decisions must be taken

with an eye to the future to lay the appropriate regulatory foundation without ignoring the current realities. The Commission must balance the need to ensure the policy objectives of both the *Broadcasting Act* and the *Telecommunications Act* are met while not impairing the ability of traditional broadcasters, BDUs or TSPs to compete effectively and nimbly in a fragmented marketplace.

## 4.2 Consolidation

207. Increasing horizontal and vertical integration in the communications industry has occurred both organically through the re-purposing of communications networks to deliver a range of services and through mergers and acquisitions activity. It likely occurred as a result of corporate desire to maximize profit by better controlling costs and attempting to share in the rewards if any new product line takes off. However, looking forward, it is likely that further consolidation may occur increasingly in response to fragmentation. A strong domestic base may become critical for both broadcasting and telecommunications companies as they face an increasing array of over-the-top services, applications and content. The largest communications companies will continue to offer bundles of services at reduced prices in return for contractual loyalty. There will continue to be pressure on both cable and telecommunications entities to seek further mergers to take advantage of efficiencies.

### 4.2.1 The impacts on competition and diversity

208. Consolidation can have the effect of reducing competition in the marketplace, resulting in monopolies or oligopolies. This may compromise the Commission's legislated objectives to achieve affordable pricing, universal access and a diversity of content choices. A balance between the market's natural tendency toward integration, with ensuing benefits for the financial health of the sector, and the requirement to maintain the necessary conditions for competitive entry, with benefits to consumer pricing, diversity of editorial sources, and the "virtuous circle" of innovation created through the competitive dynamic, have led to regulatory policies such as diversity of voices and common ownership policy rules in broadcasting, as well as various wholesale regimes in telecommunications.
209. The *ex ante* requirement for licensing and tariffs for telecommunications services has allowed the Commission in the past to prescribe a level of diversity and competition within communications markets. The interplay of priority programming rules and Canada Media Fund obligations work to limit the potential for full vertical integration by broadcasters up and down the production/broadcasting value chain.<sup>79</sup> In the regulation of radio, rules prescribe a ceiling on the number of stations that companies may operate in a market—the common ownership policy that ensures allocations of increasingly scarce spectrum to a diversity of entities. In television, diversity of voices rules prescribe a ceiling on audience share that may be aggregated through mergers and acquisitions, as well as prohibiting cross-ownership of newspapers, radio stations and OTA television services in a single market.
210. Rules that seek to accomplish a diversity of voices and to minimize the market's natural tendency toward integration are coming under increasing scrutiny by stakeholders in the mid-term. Questions have been raised by stakeholders with respect to rules underlying eligibility for a broadcasting license in support of a diversity of ownership entities. Where regulated entities are limited in their growth by those rules, they will seek unregulated alternatives to achieve scale and scope. As discussed earlier, movement away from the regulated system implies a loss of revenues supports for Canadian content.

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<sup>79</sup> Canada Media Fund changes, unannounced as of fall 2009, are likely to at least somewhat change this dynamic.

211. Within telecommunications, Internet, local and voice services are all subject to a degree of wholesale requirement, as well as regimes requiring fair and reasonable interconnection. Rules governing marketing practices have largely been eliminated as forbearance orders come into effect for large portions of the country's residential markets. However, the requirement to offer tariffed essential facilities on a wholesale basis continues to be in effect. These rules are coming under increasing pressure as the largest facilities-based entities look forward to massive capital investments. Those investments will be made in next generation access technologies such as FTTN/VDSL and DOCSIS 3.0, and it is entirely possible that within the mid-term, industry focus will shift to FTTH. Other jurisdictions, such as the U.K., have taken a different measure to ensure both competition and network evolution by taking an open network and structural separation approach.
212. The Canadian market for communications services, often marketed in bundles comprised of telephony, Internet, mobile and broadcasting services (or a subset of those services) and which bind the consumer with contracts, is highly concentrated—to the benefit of incumbent telephony and cable providers. Mobile providers, offering voice, Internet and broadcasting, are emerging as a third choice for some consumers who are choosing to forego wired communications.
213. The effect of pricing competition is, in the eyes of the public, mitigated by a relatively low number of providers, especially of facilities-based quad-play providers. It will be challenging to find a carefully considered balance between creating a vigorous wholesale market which disciplines incumbent pricing, fostering the development and adoption of innovative services through facilities-based competition and ensuring network providers are able to make the significant network investment required to update network infrastructure to provide next generation speed and capacity.

#### **4.2.2 Foreign ownership considerations**

214. The Commission should also be mindful that Canadians increasingly consider communications services—especially for broadband Internet—as essential. Governments will be sensitive to consumer demands for competitive choice and affordability. In the event the Commission adopts approaches that are less interventionist (for example, by removing wholesale requirements on next generation access) there is a possibility that successive governments may respond by revisiting ownership requirements that limit foreign ownership for telecommunications and broadcasting entities. Canadians, perceiving a disadvantage vis-à-vis other industrialized nations with respect to wireless penetration and pricing, may be increasingly willing to consider foreign entry in order to obtain more competitive pricing. In 2008, the Competition Policy Review Panel recommended reducing or eliminating foreign ownership restrictions for network infrastructure.
215. The Commission has asserted, most recently in its own submission to the above-mentioned Competition Policy Review Panel, that convergence makes it increasingly difficult to separate network elements from content. The requirement to maintain Canadian content assets in domestic hands, in the Commission's view, requires that existing foreign ownership restrictions be maintained. While the Commission has suggested that there is room within the existing legislation to simplify the foreign ownership test and to increase the level of ownership possible for foreign entities, it has made clear its position that control of communications companies should remain in domestic hands. The Commission's submission states: "Multi-national enterprises would have little incentive to create uniquely national content" and "A Canadian capacity to reflect Canadian cultural values must be protected in the digital age".
216. Should legislative changes occur that permit greater foreign participation in the Canadian communications landscape, there may be a requirement to examine enforcement mechanisms and regulatory tools to ensure that non-Canadian entities

comply with Canadian regulations designed to achieve the cultural and consumer objectives of the *Broadcasting Act* and *Telecommunications Act*.

#### **4.2.3 Approach to wireless regulation**

217. Within the domestic context, vertical integration may raise many of the same concerns over the relationship between network and content. Canadians are increasingly seeking multi-platform content wirelessly and online that incorporates complements to television content. The potential for gatekeeping of these services, particularly in forborne environments such as the wireless industry, which has a high ownership concentration, may warrant review in the mid-term of how multi-platform content will be treated with respect to open networks and preferential treatment. Over time, the Commission's hands-off approach to wireless may come under pressure as it becomes a more important platform tool to access all forms of communications and the distribution of Canadian content.

#### **4.2.4 Privacy implications**

218. This same convergence and consolidation trend that sees increasing delivery of multiplatform content also has important implications for privacy. Broadcasters—previously top-down, one-way distributors of content—are now deploying interactive solutions, which enables them to collect sensitive customer information using set-top boxes, websites and other interactive services. An array of sensitive information is now, and will increasingly be, available to providers, including GPS-derived location and exact viewing and shopping habits. Corporate consolidation can exacerbate privacy concerns. For example, when an entity owns information across multiple platforms and services, it can correlate the data about consumers' habits, locations and personal information.

#### **4.2.5 Consolidation conclusions**

219. Digitization and convergence have been key elements in the creation of the global village. Canadian corporations that wish to retain a significant presence in the Canadian marketplace, as well as having a place on the world stage, may find it advantageous to grow in scale and scope, including through mergers and acquisitions, in order to remain competitive globally. Consolidation can have the effect of reducing competition in the marketplace, resulting in monopolies or oligopolies. This may compromise the Commission's legislated objectives to achieve affordable pricing, universal access, innovation and a diversity of content choices and sustainable competition. Consolidation may impede consumers' choice and the ability of the market to discipline the largest service providers; therefore, regulations may continue to be necessary to ensure a diversity of Canadian voices and a strong competitive environment.
220. The Commission should continue to monitor the state of communications competition in Canada, paying close attention to rate increases, barriers for consumers, quality of service for resale-based competitors, the barriers to entry for competitors and the comparisons to other countries in terms of price parity and service innovation. Similar to the implications of fragmentation, the Commission faces a balancing act – in order to survive, corporations must be allowed to make business decisions that enable them to remain competitive and profitable. However, this cannot be at the expense of Canadians who live (physically or socially) outside of profitable markets, or at the expense of a Canadian communications industry that serves local, regional and national cultural interests.

### **4.3 National Digital Strategy – external considerations**

221. Beyond the Commission's mandate and jurisdiction, the communications industry will have challenges and opportunities that do not relate to solely to the Commission's

existing toolset. Competition policy and copyright policy will play an increasingly important role in the industry's long-term growth. While the Commission's preoccupation traditionally lies within framework established in the *Broadcasting Act* and *Telecommunications Act*, the trends identified point to issues in relation to matters of taxation, copyright, privacy, spectrum management and convergence of broadcasting and telecommunications industries, among others. These trends also speak to the need for the Commission to work more closely with other departments, such as Industry Canada and Canadian Heritage, to understand the full impacts of convergence on the communications industry. The development of a domestic digital economy suggests the need for a holistic review and comprehensive strategy. There is momentum within government, private enterprise and civil society to consider a national digital strategy as has been contemplated or undertaken in other jurisdictions.

222. In the summer of 2009, the Federal Government launched a review of the *Copyright Act*. The outcome of this review will have an impact on the Commission's ability to craft regulations appropriate to an evolving digital landscape.
223. Uncertainty with respect to the role of ISPs in delivering content, for example, has required the Commission to seek a decision from the Federal Court of Appeal to determine whether ISPs are broadcasting undertakings subject to the *Broadcasting Act*. Convergence of transmission and content will raise such issues further as the distinction between telecommunications and broadcasting blurs further with the advent of intelligent, high-capacity NGAs. Clarity with respect to the treatment of converged entities will be important.
224. A key challenge to the health of the broadcasting system is piracy, which cannot be understated. Piracy has fundamentally changed the music industry, forcing artists to seek ways of monetizing their work outside of traditional copyright structures. Digital distribution has forced down the price of legitimate downloads. The same forces are at work with respect to audio-visual works as increasing broadband speeds makes peer-to-peer file sharing of television programs and movies feasible for mainstream users. As noted above, where a combination of regulatory and market forces creates hurdles for users to access content, a free alternative will be available and attractive. It bears remembering that DTH television distribution piracy, whether grey- or black-market, is a significant problem in the broadcasting industry.
225. Other jurisdictions have sought a solution to piracy through obligations on ISPs to, for example, deny service to frequent infringers. A Canadian solution to ensuring the continued viability of the Canadian broadcasting industry may require a partnership with ISPs in one form or another.
226. Given the importance of broadcasting and telecommunications to the Canadian economy and national interest, there is a growing need for a national digital strategy that addresses digital communications across a wide gamut of activities; broadcasting and telecommunications regulations, copyright law, digitization efforts, arts and culture funding, an appropriate tax regime that addresses research and development needs, and more, as required..
227. A national digital strategy might also consider the economics of competition in the communications sphere. There is currently a tension between advocates of unencumbered market forces as the means to create competition, and those who predict the emergence of a facilities-based duopoly with respect to residential services. Market forces proponents seek the elimination of regulations, while the latter ask the Commission for greater regulatory intervention to create the necessary conditions for competition. Since either approach will take place in the context of government, spectrum policy and Competition Bureau decisions, the subject of a holistic national approach to competition requires discussion.

228. Furthermore, a national digital strategy should consider how advanced digital infrastructure will be made universally available given the regulator's limitations to do so through telecommunications and broadcasting regulation alone.
229. Finally, to better compete in a global, digital environment, Canadians need the ability to actively participate in the creation and presentation of, and see themselves reflected in, Canadian stories. A world-leading broadband network infrastructure is not an end in itself. The "pipes" are only useful inasmuch they are used to deliver services, applications and content to Canadians. It will be necessary to ensure that Canadians can contribute to and see themselves in stories that are accessible on multiple digital platforms, whether from private, public or community sectors. The role of the public broadcasters in this environment will be a key consideration.
230. Strengthening and promoting Canadian content, services and applications in a global digital environment will enhance Canada's position in a global digital information economy.

## APPENDICES

### ***Focus briefs***

The following are a set of briefs, each focussing on a specific issue that is likely to require some degree of regulatory treatment within the next five years. Each brief:

- introduces the issue and relevant background information;
- provides an overview of the current regulatory framework in Canada;
- provides an overview of the international situation and regulations;
- presents the drivers; and
- estimates the timeframe when the issue will likely require treatment; and
- outlines future regulatory considerations;

The goal in presenting these is two-fold: firstly, to generate a document that can be enhanced as new information becomes available to give the Commission a head start in the consideration of the issues with a view to becoming ready for a process and, secondly, to ensure these issues are understood at a high level as the Commission considers related matters in the short-term.

The briefs deal with:

- New multimedia broadcasting technologies;
- FM radio spectrum allocation;
- Spectrum licensing and allocation with Industry Canada;
- Independent communications complaint agencies: the need for a BDU complaint agency;
- Next Generation Access;
- Universal Broadband Access; and
- Privacy protections.

## **Appendix 1 – New multimedia broadcasting technologies**

### **Issue**

The appropriate regulatory framework for programming delivered to mobile devices using terrestrial digital multimedia broadcasting technology. This does not include AM, FM or satellite radio programming delivered to mobile devices.

### **Background**

Multiple mobile broadcasting technologies that enable the delivery of broadcasting content to mobile devices such as smartphones and portable players are either being employed currently or are in development. There are generally two ways of delivering audio and audiovisual content to a mobile device: point-to-point (two-way) and point-to-multipoint (one-way).

#### **Point-to-point**

In a point-to-point system, the mobile device connects with the service and users request specific streams that begin and end under their control from a selection of content offered by the service provider.

Examples of current point-to-point offerings in the Canadian market include radio services aggregated and distributed via cell phone networks (such as TELUS Mobile Radio) and clip and streaming video services offered to capable smartphones. Although Internet streaming of audio content to mobile devices is becoming increasingly prevalent in the Canadian marketplace, there is a limited number of point-to-point mobile television broadcasting services available in Canada, including offerings from Rogers Communications Inc., Bell Canada and TELUS Communications Inc. based on the MobiTV<sup>80</sup> platform.

Service providers have recognized that point-to-point mobile broadcasting services require greater resources than point-to-multipoint services. Each user-initiated stream in a point-to-point architecture requires a dedicated channel, with inherent capacity issues compared to offering a single stream to multiple users at a time, particularly where video is concerned. It could prove compelling to providers to offer a variety of popular content—both audio and video—on a point-to-multipoint basis to reduce network demands.

#### **Point-to-multipoint**

A point-to-multipoint system is similar to a traditional OTA broadcasting system in that content is broadcast en masse to mobile devices equipped with compatible tuners.

Where point-to-multipoint audio services are concerned, traditional radio services as well as satellite radio services such as those provided by XM Radio and Sirius are readily available in the Canadian marketplace. This is not the case for point-to-multipoint mobile television services, as there are currently no such services offered in Canada.

Technologies that can provide the mobile point-to-multipoint audiovisual streams include DVB-H,<sup>81</sup> ATSC-M/H,<sup>82</sup> MediaFLO,<sup>83</sup> and T-DMB.<sup>84</sup> Such services operate across a variety of

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<sup>80</sup> MobiTV, Inc. is a global television and digital radio service provider for mobile phone users. The MobiTV service is available in the U.S. through Sprint Nextel Corp., AT&T Mobility, Alltel Corp. and several regional carriers; and in Canada through Bell Canada, Rogers Communications Inc. and TELUS Mobility.

<sup>81</sup> Officially endorsed by the European Union as the preferred technology for terrestrial mobile broadcasting, DVB-H is a transmission standard that uses time-slicing in order to ensure smooth transfer of the transmission from one network cell to another. DVB-H creates a bridge between the classical broadcast systems and the cellular radio

radio bands, with the 700 MHz band considered prime spectrum due to its superior propagation characteristics compared to higher frequency bands and its lower cost per bit delivery for mobile television services.

### **Current regulatory framework**

#### **New media exemption order**

In *Exemption order for new media broadcasting undertakings*, Public Notice 1999-197, 17 December 1999, the Commission exempted persons who carry on, in whole or in part in Canada, broadcasting undertakings of the class consisting of new media broadcasting undertakings, from any or all of the requirements of Part II of the *Broadcasting Act* or of a regulation thereunder. The Commission further defined new media broadcasting as broadcasting services delivered and accessed over the Internet. In *Review of broadcasting in new media*, Broadcasting Regulatory Policy 2009-329, 4 June 2009, the Commission decided to maintain the exemption, finding that Internet and mobile services are acting in a complementary fashion to the traditional broadcasting system. The Commission determined that compliance with Part II of the *Broadcasting Act* by new media broadcasting undertakings would not contribute in a material manner to the implementation of the broadcasting policy set out in subsection 3(1) of the Act. The Commission expects to review the approach within the next five years.

Both audio and video services delivered over wireless platforms via the Internet would fall within the Commission's definition of new media broadcasting. As a result, such services, which include streamed Internet radio services, are being provided to consumers without regulatory obligation under the new media exemption order.

The Commission does not currently have a definition or policy for terrestrial digital multimedia broadcasting technologies that operate point-to-multipoint. That is, there is no regulation or policy in place currently for new wireless broadcasting technologies that operate like traditional television services, with all streams available to all users simultaneously, subject only to access controls employed by the provider. For example, access to the streams may be subject to payment of a subscription fee.

### **Drivers and triggers**

#### **Point-to-point audio**

There is an inherent link between growth in point-to-point streaming of audio content and the increase in Canadian mobile Internet subscribers. In its *Global Entertainment and Media Outlook 2009-2013*, PricewaterhouseCoopers estimated that by 2013, Canadian mobile Internet subscribers will increase to 8 million (approximately 28% of wireless telephone subscribers) from the current level of approximately 1.4 million (approximately 6% of wireless telephone subscribers). Moreover, in the same report, PricewaterhouseCoopers estimated

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network, the broadband high-capacity downstream channel provided by DVB-H features a data-rate of several mpbs and may be used for audio and video streaming applications, file downloads and for many other kinds of services.

<sup>82</sup> ATSC-M/H shares the same RF channel as the standard ATSC television broadcast service. The standard ATSC data and the M/H (mobile and handheld) data are time-division multiplexed together to share the same RF channel, meaning it is an in-band system as it does not utilize dedicated spectrum. As such, no additional spectrum is required to introduce the service. If a regular ATSC system is in place, only an M/H exciter is required to offer the service. Regular ATSC DTV receivers receive the DTV signals while the M/H receivers decode the M/H service.

<sup>83</sup> Created by Qualcomm, MediaFLO is a mobile broadcast platform designed for the delivery of streaming video and audio, IP datacasting and interactive services. The MediaFLO system ingests video content from satellite feeds, reformats the video and distributes it to multiple regional transmitter sites that broadcast the video to MediaFLO-enabled mobile devices within range of the towers. The system also provides for a reverse link to mobile devices using 3G networks. More information on the MediaFLO system can be found at <http://www.mediaflo.com/mediaflo/index.html>.

<sup>84</sup> T-DMB is made for transmissions on radio frequency bands band III (VHF) and L (UHF), for terrestrial. In Canada, the first band is allocated for television broadcasting (VHF channels 7 to 13), but the L-band could be used.

that mobile access spending will increase from \$255 million in 2009 to over \$1.3 billion in 2013.

The increase in mobile Internet subscriptions, coupled with increased connectivity of mobile devices in vehicles through services such as Microsoft SYNC, which supports Bluetooth for streaming radio content over the Internet from web-connected smartphones and PDAs, could contribute to increasing the overall penetration of audio services streamed to mobile devices. It is generally recognized that pervasive access will be achieved only when people have the ability to listen to high-quality streamed audio content within the vehicle, or, until such time as car radios become IP-based.

Although streaming of audio content is possible using the current generation of wireless networks, with the considerably higher bit rates enabled by next generation wireless networks such as WiMax<sup>85</sup> and LTE,<sup>86</sup> high quality streaming of audio content to mobile devices will likely become increasingly ubiquitous, ultimately achieving widespread integration into vehicles.

As a result, regulated audio services such as traditional radio and satellite radio could eventually face greater competitive pressure from exempt streamed audio services.

#### **Point-to-point video**

As is the case with point-to-point audio services, substantial growth in demand for point-to-point mobile television services will be driven by two key factors: network capacity improvements and increases in mobile Internet penetration. However, where quality audio services can be delivered via 3G network architecture, improvements in the quality of point-to-point video services in Canada are generally considered to be much more reliant on the introduction of HSPDA and next generation wireless networks. As a result, in the short to medium-term, growth in streamed audiovisual content will likely be limited until such time as the Canadian market transitions to these wireless networks.

#### **Point-to-multipoint video**

Although point-to-multipoint mobile audio services such as AM/FM and satellite radio are well entrenched in the Canadian marketplace, the future direction of point-to-multipoint television broadcasting to mobile devices is far from defined. The adoption of a common mobile DTV standard for the Canadian market could act as a key driver in the introduction of point-to-multipoint mobile television services in Canada.

A December 2008 decision in the U.S. by the ATSC and supported by the OMVC<sup>87</sup> to adopt a candidate standard for television stations to deliver video to mobile and hand-held devices via ATSC-M/H mobile DTV technology paved the way for the commercial deployment of mobile broadcast television services in that country in 2009.

In January 2009, the OMVC confirmed that broadcasters intended to launch ATSC-M/H mobile DTV services in 2009 across 63 stations<sup>88</sup> in 22 markets, covering 35% of U.S. television households, with ATSC-M/H compatible devices to be supplied by LG and Samsung.

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<sup>85</sup> WiMAX is one of the technologies that is being used for next generation wireless networks. It can be used in both point-to-point and the typical WAN type configurations that are also used by 2G and 3G mobile network carriers.

<sup>86</sup> LTE, short for Long Term Evolution, is considered to be a successor to the current generation of UMTS 3G wireless technology. While LTE is not a replacement for UMTS in the way that UMTS was a replacement for GSM, it will provide significantly faster data rates for both uploading and downloading.

<sup>87</sup> The OMVC is an alliance of U.S. commercial and public broadcasters formed to accelerate the development and rollout of mobile DTV products and services.

<sup>88</sup> 63 stations include 14 NBC affiliates, 9 ABC affiliates, 5 Fox affiliates, 9 ION Television affiliates, 4 CW affiliates, 4 MyNetworks as well as PBS stations that are in discussion with OMVC to join the 2009 launch.

The ATSC-M/H mobile DTV technology uses existing broadcast spectrum allowing a mobile stream to be broadcast within a station's digital channel without interfering with existing multicast services. However, in addition to being able to provide a simulcast of programming, the proposed architecture could eventually support interactive features such as location-based services, PPV and push VOD via a 3G streaming channel.

A commercial deployment of ATSC-M/H in the United States would likely contribute to the availability of receivers for the Canadian market, another key driver of point-to-multipoint broadcasting services. The U.S. launch could also provide some insight as to the potential for commercial viability of multicast mobile television services in Canada.

Of particular note, deployment of large-scale mobile multicast DTV services in Canada depends on the provision of free OTA DTV service in Canada as a result of the 2011 digital transition as ATSC-M/H technology would essentially "piggy back" on existing ATSC digital transmission facilities, making deployment more cost effective.

Though not certain, early adoption of ATSC-M/H may portend commercial rollout in Canada. Vertically-integrated providers with both content offerings (television broadcasting and distribution) and wireless offerings may implement the technology coinciding with digital conversion.

#### **Growth forecast for mobile television services in Canada**

PricewaterhouseCoopers expects mobile TV will begin to gain momentum in Canada in 2010 reaching 600,000 subscribers by 2013 with average monthly spending of U.S.\$5.86 per user; aggregated subscription spending is projected to increase from U.S.\$4 million in 2010 to U.S.\$42 million in 2013. PricewaterhouseCoopers expects that subscription services will compete with free services, as in the U.S.

#### **Future regulatory considerations**

Since the advent of radio broadcasting, the regulatory approach to broadcasting has been focused on achieving the policy objectives of the *Broadcasting Act* and previous legislation.

Past and current regulatory measures have leveraged the requirement for physical infrastructure to distribute broadcasting content. Licensing has been the primary regulatory tool used to achieve the *Broadcasting Act's* policy objectives. The ability to enforce limited entry has provided the Commission and its predecessors the wherewithal to require obligations of entrants, such as Canadian content and expenditure rules; Canadian ownership; benefits in cases of mergers and acquisitions; carriage rules in the case of distributors; requirements with respect to local, linguistic and other reflection.

The *ex ante* requirement for licensing of broadcasting programming and distribution undertakings has been largely enforceable in a traditional environment. The requirement to use public spectrum, or to gain carriage on a licensed distribution undertaking, combined with the traditional requirement to be located with fixed infrastructure in a particular geography—as in the case of providing OTA transmission of programming—has made enforcement of the relevant provisions of the *Broadcasting Act* practical.

#### **Asymmetrical regulation between regulated mobile broadcasting undertakings and exempt mobile Internet content providers**

The availability of broadcasting content using the public Internet has, as the Commission has recognized, created challenges for traditional licensing schemes as there is no longer a requirement to locate facilities within a jurisdiction in order to serve it, or to gain access to a viewer or listener through an aggregator such as a distributor.

The business model for mobile broadcasting, however, is not an “over-the-top”, geography-independent one. A likely model sees companies that control the appropriate spectrum aggregating signals, much as distributors do currently. While an *ex ante* approach may be tenuous in the Internet environment, it is possible that undertakings engaged in aggregating and distributing mobile broadcasting content can be licensed, and that policy-related obligations can be imposed and enforced.

Before a traditional approach such as licensing is contemplated, however, the Commission must be cognizant of the potential distorting effects of regulation in the marketplace and its unintended consequences. The implications of asymmetrical regulation between mobile broadcasting undertakings on the one hand and unregulated Internet content need to be understood to ensure that licensed sector is not disadvantaged while not hindering the ability of either sector to innovate.

#### ***Mobile audio considerations***

The asymmetrical regulatory environment that has resulted from policy initiatives such as the *Exemption order for new media broadcasting undertakings*, Broadcasting Public Notice 1999-197, 17 December 1999, has contributed to certain inconsistencies within Canada’s mobile audio broadcasting industry. For example, as a satellite radio provider, XM’s satellite radio operations are subject to regulatory obligations while XM satellite radio content streamed over TELUS Mobile Radio (which allows it to overcome penetration issues in buildings), would be exempt from such obligations.

Furthermore, streaming could emerge as a competitor to established radio services and eventually pose a threat to the revenues that are used to support the obligations of the licensees. Although well-established traditional radio undertakings are well positioned to withstand these competitive pressures, the same cannot necessarily be said of Canada’s satellite radio services, who are still trying to establish a strong foothold in the Canadian market.

#### ***Mobile television considerations***

For mobile television offerings, the technology platforms (i.e. point-to-point, point-to-multipoint) that will drive the industry in Canada remain undefined, and the possibility exists that a hybrid solution could ultimately prevail. In establishing an appropriate regulatory approach to mobile television in Canada, the Commission will undoubtedly face the challenge of reconciling the major structural differences associated with various competing technology platforms. More specifically, this could involve achieving a degree of regulatory symmetry between, on one hand, a point-to-point wireless broadband delivery model for which access is limited by bandwidth and where channel capacity (i.e. content) is virtually infinite and on the other hand, a point-to-multipoint “broadcast” approach which provides almost unlimited access, but where content could potentially be restricted by spectrum availability.

#### ***The prevailing business models and the impact on revenue distribution***

Ultimately, regulatory approaches respecting mobile broadcasting will also be affected by the prevailing business models and the way in which the various stakeholders in the value chain distribute revenues.

#### ***Mobile television considerations***

For example, in the case of mobile television, one potential model could see wireless operators paying broadcasters for the right to retransmit controlled content to consumers over the wireless networks. Over and above any compensation for rights to content, broadcasters would likely derive incremental advertising revenues by reaching additional viewers via the mobile platform. Under such a scenario, wireless operators would likely become content aggregators, offering packaged content to consumers under a subscription revenue model. It could also allow providers to assemble content from multiple sources in order to provide a compelling offering to consumers.

A second possible model could see broadcasters negotiate with device manufacturers (and/or wireless carriers) in order to have DTV tuners embedded within mobile devices, which could enable them to bypass mobile networks altogether by using their own spectrum to offer mobile broadcasting services. Such a model would closely resemble the traditional OTA broadcast revenue model in that broadcasters would derive revenues through advertising sales.

However, it can be expected that Canadian wireless carriers would want to maximize their role in the value chain, leveraging the fact they are key drivers of mobile device sales in Canada. The ATSC-M/H candidate standard adopted in the U.S. includes the potential for incorporating a return path, provided via wireless networks, for additional content offerings and interactive features. As such, the success of this model would likely depend on a revenue sharing agreement between carriers and broadcasters to succeed.

Given the relative scarcity of OTA Canadian content, some form of content aggregation (broadcast and streamed) will likely be necessary, with cooperation between broadcasters and wireless carriers paramount to the development of a successful business model for large-scale mobile broadcasting services in Canada that provides consumers with a compelling array of content. It is therefore likely that a hybrid point-to-point/point-to-multipoint model could ultimately prevail.

In light of the vast differences that exist between the various potential business models, until one emerges that more clearly defines the distribution of revenues and content in a mobile television broadcasting environment, it will be difficult for the Commission to evaluate the impact of such services on the various stakeholders within the Canadian broadcast industry.

### **Priority and timeframe**

#### **Mobile audio**

The increase in mobile Internet subscriptions, coupled with increased connectivity of mobile devices in vehicles through services such as Microsoft SYNC, a voice-activated mobile phone and digital music system available in most 2009 Ford vehicles which supports Bluetooth for streaming radio content over the Internet, could contribute to increasing the overall penetration of audio services streamed to mobile devices. It is generally recognized that pervasive access will only be achieved when people have an easy-to-use, high quality stream of audio content within the vehicle, or, until such time as car radios become IP-based.

In January 2009, consumer electronics device maker Blaupunkt and Internet radio provider miRoamer introduced an Internet radio for the vehicle which would allow the consumer to instantly flip back and forth between Internet or terrestrial radio stations in the console. The system is designed to operate on 3G GSM networks and although no timelines have been provided for introduction in Canada, it serves as yet another example of a gradual shift into the paradigm of in-vehicle Internet radio.

While streaming of unregulated audio content currently complements traditional radio and satellite radio, in the short to medium-term, the Commission should monitor any distorting effects on the competitive landscape caused by competition from mobile audio streaming.

#### **Mobile television**

Even though a limited number of mobile television services have been deployed in Canada, take-up of these services has thus far been modest. In the case of mobile point-to-point television services, the move towards HSPDA and next generation wireless networks in Canada will likely be necessary to accommodate significant improvements in service quality and content availability.

Although point-to-multipoint mobile television services will see large-scale deployment in the U.S. market by the end of 2009, there is currently no established timeframe respecting the introduction of new mobile television point-to-multipoint technology platforms in Canada (e.g. ATSC-M/H, DVB-T, MediaFlo, T-DMB). A clear direction will not likely emerge until the framework for the digital transition of 2011 is more clearly defined. Moreover, with aggregate mobile television revenues not expected to surpass the U.S.\$100 million threshold until the end of 2011.

Ultimately, the Commission could face a decision as to whether or not to exempt point-to-multipoint mobile television services from regulatory requirements, as is the case for point-to-point mobile broadcasting services (*Exemption order for mobile television broadcasting undertakings*, Broadcasting Public Notice 2007-13, 7 February 2007), or whether to establish a licensing system in anticipation of the introduction of such services in the medium- to long-term.

## **Appendix 2 – FM radio spectrum allocation**

### **Issue**

Many of Canada's largest metropolitan centres are faced with a scarcity of quality available FM frequencies, ultimately preventing the introduction of new competitive and diverse services in these markets.

### **Background**

#### **Migration from AM band to FM band**

Over the last decade, the Canadian radio industry has seen several stations migrate from the AM band to what has emerged as the more popular FM band. A major reason for this is that although AM radio has a wider coverage area than does FM radio, the superior reliability and sound quality of FM has made it a highly valued signal, particularly for music-driven radio stations. The result is that in today's environment, the AM band is reserved primarily for non-music programming content, such as news/talk and sports radio, as well as more targeted initiatives such as ethnic broadcasting.

Nowhere has the trend towards FM radio been more evident than in recent Canadian radio licensing decisions, whereby between 2004 and 2008, the Commission approved 253 new OTA FM radio stations, of which 45 were AM to FM conversions. By comparison, over this same period, the Commission approved only eight new AM stations.

The increase in demand for FM frequencies and the subsequent increase in licensing within the band has led to a dearth of available FM signals in many large and major Canadian radio markets, where advertising revenue growth and profitability continue to be strong despite the addition of new licensees throughout the 2000s. For example, in markets such as Montréal, Toronto and Ottawa, there are few, if any, quality FM frequencies available. In some cases, it is expected that certain markets will be able to support additional radio undertakings beyond the number of FM frequencies available.

#### **The need for diversity within the broadcast system**

Historically, the Commission has adopted a balanced approach to licensing new radio undertakings as it strives to achieve the diversity objectives of the *Broadcasting Act*. In doing so, the Commission looks to ensure:

- the plurality of commercial editorial voices in local and national markets and the most effective means of ensuring that Canadians are exposed to an appropriate plurality of voices. A plurality of ownership in the private element is necessary in order to maximize the diversity of voices in the Canadian broadcasting system; and
- the diversity of programming choices offered to Canadians and the effectiveness of existing or proposed regulatory tools in ensuring appropriate diversity of content. The Canadian broadcasting system should ensure that audiences have access to a diversity of programming—especially national, regional and local content.

As FM frequencies become more scarce, the Commission has lost much of its ability, in certain markets, to ensure ownership and programming diversity through the licensing process. This issue is further exacerbated by the current environment of corporate consolidation within Canada's radio industry, which some argue has contributed to decreasing overall diversity within the Canadian broadcast system.

The Commission can ultimately rely on tools such as the common ownership policy to ensure a minimum level of ownership diversity within markets by placing restrictions on the number of AM and FM stations that can be controlled by a single group. However, the evolving realities of the radio landscape may require a new direction for ensuring editorial and programming diversity within certain markets.

### **Relevant current regulatory framework**

#### **Common ownership policy**

The common ownership policy for radio is set out in *Commercial Radio Policy*, Public Notice 1998-41, 30 April 1998. It states:

In markets with less than eight commercial stations operating in a given language, a person may be permitted to own or control as many as three stations operating in that language, with a maximum of two stations in any one frequency band. In markets with eight commercial stations or more operating in a given language, a person may be permitted to own or control as many as two AM and two FM stations in that language.

The common ownership policy was reaffirmed in *Diversity of Voices*, Broadcasting Public Notice 2008-4, 15 January 2008.

In addition to other issues that may be raised in the context of a particular application, persons who have filed applications which raise common ownership policy concerns are required to answer questions related to the impact on diversity of news voices and the level of competition in the market.

#### **The community radio policy**

Section 3(1)(b) of the *Broadcasting Act* provides for a Canadian broadcasting system composed of public, private and community elements and further confirms that community radio stations are an important element of the Canadian broadcasting system. In *Community radio policy*, Public Notice 2000-13, 28 January 2000, the Commission stated that community stations should add diversity to the broadcasting system by increasing program choice in both music and spoken word. They should contribute to diversity at three levels:

- community stations should offer programming that is different from and complements the programming of other stations in their market. Their not-for-profit nature and community access policies should assist them in contributing to the achievement of this objective;
- community stations should be different from other elements of the broadcasting system, including commercial stations and stations operated by the CBC; and
- the programming broadcast by individual community stations should be varied and provide a wide diversity of music and spoken word.

#### **The ethnic broadcasting policy**

Section 3(d)(iii) of the *Broadcasting Act* states, among other things, that the Canadian broadcasting system should reflect the circumstances and aspirations of Canadians, including the multicultural and multiracial nature of Canadian society.

On the issue of spectrum scarcity and the challenges it poses for ethnic broadcasting, the Commission states in *Ethnic broadcasting policy*, Public Notice 1999-117, 16 July 1999, that limitations on the number of radio and television frequencies available make it impossible to license separate OTA stations for each ethnic group. In addition, smaller groups generally do not have the financial resources to sustain their own services. As a result, the Commission

has mandated that ethnic stations be required to serve a broad range of ethnic groups within their service area. When setting the number of groups that each station must serve, the Commission considers the quality of service to each group and the existing level of ethnic programming from all sources in the market. In some cases, individual ethnic stations may be permitted to serve fewer groups in some communities.

#### **The digital radio policy**

In *Digital radio policy*, Broadcasting Public Notice 2006-160, 15 December 2006, the Commission recognized that the adoption of the new digital radio technology by consumers and the switch-over by the radio industry to digital was effectively stalled. The Commission concluded that the regulatory framework for the existing FM analog services will be extended to licensees operating under the new service model in the L-band. However, to encourage innovation in programming, the Commission stated that it would entertain applications by digital stations that propose exceptions to the provision of the commercial radio policy that requires that stations operate in specialty or non-specialty programming formats by condition of licence.

Also, if Industry Canada authorizes IBOC technology for the AM and/or FM bands under the *Radiocommunication Act*, the Commission would be prepared to authorize services using this technology under the Act. An expedited process would be adopted for stations that propose to transmit a digital simulcast of their analog service.

The Commission further indicated that it will permit a person to own or control one digital radio undertaking for every analog radio undertaking permitted under the common ownership policy. Therefore, in a market where the current ownership limit is three stations, a person may own or control as many as three digital stations and three analog stations, and in a market where the limit is four stations, a person may own or control a maximum of four digital stations and four analog stations.

#### **The new media exemption order**

In *Exemption order for new media undertakings*, Public Notice 1999-197, 17 December 1999, the Commission exempted persons who carry on, in whole or in part in Canada, broadcasting undertakings of the class consisting of new media broadcasting undertakings, from any or all of the requirements of Part II of the Act or of a regulation thereunder. The Commission further defined new media broadcasting as broadcasting services delivered and accessed over the Internet. In *Review of broadcasting in new media*, Broadcasting Regulatory Policy 2009-329, 4 June 2009, the Commission decided to maintain the exemption, finding that Internet and mobile services are acting in a complementary fashion to the traditional broadcasting system. The Commission determined that compliance with Part II of the *Broadcasting Act* by new media broadcasting undertakings would not contribute in a material manner to the implementation of the broadcasting policy set out in subsection 3(1) of the Act. The Commission expects to review the approach within the next five years.

As a result, where mobile broadcasting is concerned, both audio and video services delivered over wireless platforms via the Internet would fall within the Commission's definition of new media broadcasting. As a result, such services, which include streamed Internet radio services, are being provided to consumers without regulatory obligation under the new media exemption order.

### **Drivers and triggers**

#### **The changing landscape for radio in Canada**

Examination of the issue of FM spectrum scarcity entails reflection concerning the larger question surrounding the future of Canada's radio landscape and the alternative technologies that will emerge to ensure the provision of broadcast audio content. More importantly, to what extent do these technologies threaten the long-term viability of traditional FM radio stations?

Can these technologies coexist with traditional radio broadcasting to form a multi-platform solution to the delivery of Canadian audio content?

### ***Broadcast digital radio***

Although broadcast digital radio was generally considered to have a key role in alleviating spectrum scarcity in major markets, the L-band DAB and IBOC technologies have been slow to evolve in Canada, to the extent that there is considerable doubt as to whether they will have a role to play in shaping Canada's future radio landscape.

#### *L-band DAB*

Industry Canada and the Commission proposed L-band DAB, defined as 1452-1492 MHz, as a replacement technology in the mid-90s, believing that AM and FM radio stations would voluntarily migrate to L-band to take advantage of the superior sound quality associated with the technology.

The Commission licensed digital radio services (79 authorized, 44 on-air as of June 2007) using L-band DAB, based on the Eureka-147 standard. However, widespread migration to the L-band has not materialized as planned. From a consumer standpoint, L-band also has several drawbacks, including the lack of original services and the limited availability and cost of receivers on the market.

Furthermore, the U.S. did not follow Canada's lead and in October of 2002, the FCC adopted IBOC instead of L-band DAB as the digital radio standard. Also, in a May 2007 letter to the Commission, Industry Canada announced that it had stopped issuing broadcasting certificates for L-band transmitters and is awaiting the results of a future policy review to determine the future of the L-band in Canada. This has led to considerable doubt about the future prospects of L-band in Canada.

#### *IBOC*

While a number of radio stations (1,750 out of 13,000 AM/FM stations) in the U.S. are operating IBOC transmitters, sales of receivers remain sluggish. Further, AM IBOC rollout has essentially stopped in the U.S. in 2008 due to interference issues.

For its part, the Commission, through its digital radio policy (Broadcasting Public Notice 2006-160),<sup>89</sup> stated that it would be prepared to authorize services using the IBOC technology. Industry Canada is preparing rules and regulations for the operation of IBOC which could include an amendment to FM Broadcasting Procedures and Rules (BPR-3). It is not actively looking at AM IBOC.

However, where the Canadian market is concerned, IBOC is at a very nascent stage and an eventual large-scale deployment in the Canadian market remains highly uncertain.

#### *Channel 5 and 6 proposal*

Another proposal for digital radio, which has not yet been approved by the FCC, involves re-allocating channels 5 and 6 from television to radio. The reallocated spectrum, with its total bandwidth of 12 MHz, would further be divided into 100 kHz channels while making use of yet to be defined digital radio technology.

#### *ATSC-M/H*

ATSC-M/H is a standard that allows television broadcasts to be received by mobile devices using a portion of the HDTV transmission for mobile broadcasting. In the U.S., the initial service is likely to be a simple mobile simulcast of the primary HDTV channel. Additional spectrum could be transitioned to the mobile broadcast enabling additional programming

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<sup>89</sup> *Digital radio policy*, Broadcasting Public Notice 2006-160, 15 December 2006.

such as news, sports, weather, traffic and premium pay content. Commercial trials in the U.S. may start in early 2010.

### ***Satellite radio***

In Canada, satellite radio is offered by two providers; XM Satellite Radio, which began operations in November 2005 and Sirius Satellite Radio, which began operations a month later in December 2005.

In 2008, the combined subscribers of the two satellite radio providers surpassed the 1 million mark. Between May 2006 and June 2008, Sirius increased its subscriber base from 100,000 to 750,000 while XM's subscriber base has gone from 80,000 in May 2006 to 400,000 as of February 2008.

Further, Sirius Canada has been adding an average of just over 30,000 subscribers per month in the first half of 2009. By comparison, XM Canada added 16,000 subscribers per month in its second quarter for 2009. In its *Global Media Outlook*, PricewaterhouseCoopers projected that Canadian satellite radio subscription will grow to U.S.\$759 million in 2013 from U.S.\$286 million in 2008, a CAGR of 21.5%. PricewaterhouseCoopers was of the view that satellite radio in Canada is still in the early stages of significant growth. Satellite radio has considerable exposure to large decreases in new vehicle sales, a key driver of growth in the satellite subscription base.

Based on its subscription revenue model, satellite radio faces considerable exposure to the competitive threat of streamed audio content to mobile devices, particularly in urban centres where wireless networks will become more robust with the eventual introduction of next generation technologies such as LTE and WiMax. More specifically, streamed audio over Internet can incorporate value-added interactive features that are impossible under a unidirectional satellite service and offers an almost endless supply of free content (excluding data plan charges), including the ability to access local information, which has long been considered a key weakness of satellite radio.

### ***Streamed audio content***

Listening to the radio through the Web has become relatively common and the digital age is turning radio into a non-linear experience, offering interactive capabilities that are not available through conventional radio.

It is becoming standard for radio stations to simulcast over the Internet. However, it is generally recognized that pervasive use of radio over IP will only be achieved when people have the ability to listen to high-quality streamed audio content within the vehicle.

With the considerably higher bit rates enabled by next generation advanced wireless networks such as WiMax and LTE, high-quality streaming of audio content to mobile devices will become increasingly ubiquitous, and widespread integration into vehicles likely to develop.

### **Future regulatory considerations**

#### **Ensuring adequate access for community reflection and ethnic diversity**

As Canada's major markets continue to grow and become increasingly diverse, alternative means will be necessary to ensure that the radio landscape in these markets adequately reflects evolving demographic realities. As evidenced by the licensing trends of the last few years, demand for AM frequencies has all but disappeared, underlining AM radio's limited potential as a viable option to address FM spectrum scarcity.

In the face of considerable competition for a limited number of frequencies, it is increasingly difficult for community and ethnic groups to find space on the radio dial in major markets. The Commission must manage the challenge of ensuring adequate access, in affected markets, for community reflection and appropriate representation of ethnic diversity. Of particular concern is the lack of resources such groups often have to explore alternate means of broadcasting their messages to what are often highly targeted communities within larger markets. Emerging technologies could have a pivotal role to play in the delivery of community and ethnic reflection going forward and it will be incumbent on the Commission, through its policies, to encourage community and ethnic groups to explore alternative means of delivering content.

### **Common ownership**

Where common ownership restrictions are concerned, the Commission may need to monitor the impact of prevailing technical standards and spectrum availability on the competitive balance within the radio industry.

Given the decreasing relevance of the AM band as well as the emerging technological landscape for delivering audio content, the common ownership policy, in its current form, may need to be reviewed.

As the competitive dynamic within the radio industry changes and competition emerges from alternative technologies, it becomes increasingly difficult to define market diversity solely within the confines of traditional AM/FM broadcasting.

Traditional AM/FM radio broadcasters will increasingly be forced to compete for audience with a multitude of these emerging competitive services. Markets of different sizes have markedly different economic and competitive realities. As such, while the common ownership policy as it currently stands may still be relevant and applicable in some markets, a multi-platform group-based approach may eventually be warranted in Canada's large and major radio markets.

### **Achieving regulatory balance between regulated radio undertakings and exempt mobile Internet content providers**

Although part of the solution in addressing spectrum scarcity, Internet streaming could have an impact on the competitive landscape for radio in Canada.

The asymmetrical regulatory environment that has resulted from policy initiatives such as the 1999 New Media Exemption Order has contributed to imbalances and inconsistencies within Canada's mobile audio broadcasting industry.

The availability of broadcasting content using the public Internet has, as the Commission has recognized, created challenges for traditional licensing schemes as there is no longer a requirement to locate facilities within a jurisdiction in order to serve it. However, the Commission reviewed the exemption order in 2009 and decided to maintain it, finding that Internet and mobile services are acting in a complementary fashion to the traditional broadcasting system.

Asymmetrical regulation between traditional radio broadcasting and digital radio undertakings, particularly those on mobile platforms, could have the effect of conferring disadvantage on the licensed sector.

### **Priority and timeframe**

In the short-to medium-term, radio will likely continue its evolution from an AM/FM-dominated model to a mixed model of analog, satellite and digital (including Internet streaming).

The traditional radio broadcast industry remains healthy and the number of stations continues to grow. Between 2003 and 2007, the total number of commercial AM and FM stations in Canada increased from 433 to 504, indicating general optimism regarding the future of traditional broadcasting. This optimism is further supported by the fact that total revenues and profitability remain strong (6.6% CAGR since 2003 and 21% PBIT in 2007).

However, if Sprint Nextel Corp.'s deployment of WiMax and Verizon Communications Inc.'s imminent deployment of LTE in the U.S. market are an indication of the eventual deployment timeline of such services in Canada, it is not unrealistic to predict that a next generation network offering will hit the Canadian market between 2012 and 2014. As this occurs, the deployment of high quality mobile audio and video services over the mobile Internet will follow in short order.

With streaming of unregulated audio content from providers such as icebergradio.com and last.fm increasingly emerging as a potential substitute for both traditional radio and satellite radio, in the medium-term, the Commission will undoubtedly face increased demands to address any distorting effects caused by competition from mobile audio streaming as these services are considered exempt from regulation.

## **Appendix 3 – Spectrum licensing and allocation with Industry Canada**

### **Issue**

The 2006 TPRP Report advocated the transfer of spectrum management to an independent regulator, the CRTC.

### **Background**

Consumers and providers of communications services face a regulatory system that falls under the purview of two departments, three acts, three sets of regulations and two licensing bodies.

The provision of Internet access is governed under the *Telecommunications Act*, which does not have the broader cultural goals of the *Broadcasting Act*, while the *Radiocommunication Act*, which governs wireless communication, also makes no reference to the cultural objectives set forth in the *Broadcasting Act*.

As broadcasting content increasingly migrates onto converged fixed and mobile Internet platforms, this multi-pronged approach to regulation will create many challenges regarding the adoption of measures that combine the cultural and economic goals of the various Acts. These new technological realities are creating a fully converged content and access environment that requires coherence from regulators.

### **Relevant current regulatory framework**

#### **Spectrum policy and regulation**

Currently, two different bodies regulate Canada's communications industry. The Commission is responsible for regulating the telecommunications and broadcasting sectors, while Industry Canada is responsible for spectrum management and regulation, licensing of satellite and wireless communications services and regulation of telecommunications equipment and devices. In addition to these regulatory responsibilities, Industry Canada is responsible for Canada's telecommunications policy, including its spectrum policy.

Industry Canada's mandate for spectrum management and regulation derives from the Minister's responsibilities under *sections 4, 5 and 6* of the *Department of Industry Act*, and in more specific terms from *sections 5 and 6* of the *Radiocommunication Act* and *section 22* of the *Broadcasting Act* and its mandate also involves providing support to other federal departments and agencies under certain provisions of *section 7* of the *Emergency Preparedness Act*.

As such, its specific spectrum regulation and management functions include: development of spectrum regulatory and operational policies and procedures; spectrum authorizations (granting licences for satellite and radiocommunication systems); and enforcement of spectrum-related regulations.

In addition to these regulatory responsibilities, Industry Canada sets domestic spectrum policy, and coordinates spectrum usage and radiocommunication standards with other countries.

International treaties and agreements developed by the ITU govern the uses of the radio frequency spectrum and deployment of radiocommunication systems around the world, including the orbital positions of satellites in space. As a member of the ITU, Canada has assumed treaty obligations under the ITU Constitution and Convention and Radio

Regulations with respect to the regulation of Canadian stations that are capable of causing harmful interference to radio services of other countries.

### **Drivers and triggers**

As communications companies become increasingly horizontally- and vertically-integrated, a dual-pronged approach to the implementation of spectrum policy and Canadian ownership review creates the potential for inconsistent results, and resulting costs and uncertainty for industry.

For many Canadian ownership reviews, both Industry Canada and the Commission conduct overlapping reviews and often apply the same tests. With respect to spectrum management, there is a division of regulatory and implementation responsibilities that sees applications for various licences and certificates reviewed by both bodies. A radio station, for instance, must obtain approvals from both the Commission and Industry Canada. If there is a change of control of a telecommunications company, the Canadian ownership and control reviews will be conducted by both the Industry Canada and Commission.

### **Considerations**

#### **Commission responsibility for spectrum licensing for telecommunications and broadcasting**

A potential approach to simplifying and consolidating spectrum licensing is as follows:

- the formulation of broad spectrum policy should remain the responsibility of Industry Canada; and
- responsibility for implementing spectrum policy through regulation of spectrum under the *Radiocommunication Act*—including licensing, monitoring and the resolution of disputes such as over tower-sharing—and for review of Canadian ownership, should be transferred to the Commission.

The migration of Industry Canada's spectrum management and regulatory functions to the Commission would distinguish the role of government in setting national telecommunications policies from the role of the regulator, which is to implement those policies in an independent manner. Such an approach would allow utilization of the CRTC's transparent processes, including public hearings. Further, this division of responsibilities would result in a consistent regulatory approach. This division of responsibilities would be consistent both with the recommendations of the Telecommunications Policy Review Panel, and with the structures present in most OECD countries.

Moving the functions of spectrum regulation and management to the Commission would:

- avoid duplication, overlap and inconsistencies;
- reduce administrative costs;
- allow for harmonized processes;
- provide more stability;
- allow for the development of a high level of expertise able to deal with complex and increasingly interrelated issues; and
- strengthen Commission relationships with the international regulatory community (e.g. the FCC and other national regulators, ITU, Inter-American Telecommunication Commission, CITELE).

However, to ensure there is sufficient legislative authority to introduce the above changes, the *Radiocommunication Act* may need to be reviewed and amended to transfer spectrum regulation and licensing to the Commission.

**Priority and timeframe**

This reorganization of responsibility could occur at any time but should take into account major activities including the DTV transition scheduled for 2011 and associated spectrum auction.

## ***Appendix 4 – Independent communications complaint agencies: the need for a BDU complaint agency?***

In Canada, there are multiple avenues for consumers to make a complaint about various aspects of their communications services.

However, there is no independent entity that responds to subscriber complaints about broadcast distribution (BDU) services.

This paper provides an overview of the complaint mechanisms currently available to Canadian consumers of communications services and asks whether, in a converged environment, an agency should be established to respond to complaints about BDU services.

### **Background**

#### *The CCTS*

The CCTS is an industry-established consumer agency, independent from the telecommunications industry, with a mandate to resolve complaints from individual and small business retail customers about deregulated telecommunications services. As a recommendation of the TPRP, the CCTS does not resolve customer complaints related to BDUs.

The mandate of the consumer agency also includes the development or approval of related industry codes of conduct and standards; identifying issues or trends that may warrant further attention by the Commission or the government; and publishing an annual report on the nature, number, and resolution of complaints received for each TSP.

The CCTS is funded by member telecommunications service providers. Membership is currently mandatory for all Canadian carriers and resellers with annual Canadian telecommunications service revenues exceeding \$10 million in the previous fiscal year, and voluntary for any other retail telecommunications service providers. A list of CCTS members is also available on its website: <http://www.ccts-cprst.ca/en/complaints/service-providers>.

#### *The Do Not Call List Operator*

The National Do Not Call List (DNCL) is a list of telephone numbers of consumers who want to reduce the number of telemarketing calls they receive. Organizations that make telemarketing calls are not allowed to call phone numbers registered on the National DNCL. Bell Canada was contracted by the CRTC to act as the National DNCL Operator. The Rules are enforced by the CRTC.

#### *The Commission's Client Services Group*

The Commission Client Services group is a point of contact, by phone, mail or Internet, for complaints about regulated telecommunications services, non-Do No Call List-related telemarketing issues, and about BDU services.

The Commission will assist in resolving the complaint and/or may direct the client to contact the entity that is the subject of the complaint.

The Commission may also direct the client to other agencies such as: the OPCC; the Competition Bureau; Phonebusters; Canadian Marketing Association; provincial departments

dealing with consumer issues, business practices and debt; small claims court; and private counsel.

In 2008, the Commission handled almost 25,000 telecom complaints and over 10,000 broadcasting complaints. Of the telecom complaints, 4,315 cases were either referred to or transferred to the CCTS. Of the broadcasting complaints, almost 4,000 were related to BDU services such as billing or quality of service. The complaints the Commission received can be broken down as follows:<sup>90</sup>

Telecom Complaints		Broadcasting Complaints	
Subject	# of Complaints	Subject	# of Complaints
Billing	6529	Programming	4041
Advertising	6160	Distribution	1353
CRTC	3391	Billing	1238
Quality of service	2513	Advertising	882
Rates	1487	CRTC	758
Competition	1467	Quality of service	715
Provision of service	1399	No match	498
No match	1367	Provision of service	323
Terms of service	654	Rates	216
Ownership	10	Terms of service	111
Distribution	1	Competition	91
		Broadcasting policy	29
		Eligible Satellite Services	19
		Ownership	7
		Dispute Resolution	3

### *The CBSC*

The CBSC is an independent, non-governmental organization created by the Canadian Association of Broadcasters (CAB) to administer standards established by its members, Canada's private broadcasters. The Council's membership includes more than 730 private sector radio and television stations, specialty services and networks from across Canada, programming in English, French and third languages.

The CBSC, which responds to most content matters concerning its members, forwards the complaint to the broadcaster, who must respond to the complainant. If not resolved, the CBSC can adjudicate on the matter and publicize its decisions. The Commission deals with complaints involving non-CBSC members and areas that do not fall under CBSC-administrative codes. The Commission forwards complaints about CBSC members broadcasters to the CBSC. The Commission, however, remains the final arbiter.

A list of the CBSC's members is available on its website:  
<http://www.cbcs.ca/english/members/index.php>

### *Other Communications Complaint Agencies*

<sup>90</sup> Statistics provided by the CRTC's Client Services Group.

The Canadian Consumer Information Gateway of the office of Consumer Affairs, Industry Canada, provides on its website<sup>91</sup> telecommunications and broadcasting links to organizations involved in consumer issues (including the Commission and PIAC). The Gateway does not handle complaints directly, but outlines the steps for consumers to consider when submitting a complaint and in contacting businesses to lodge a complaint.

With respect to Internet service, the members of the Canadian Association of Internet Providers (CAIP) has developed a voluntary code of conduct in relation to such matters as personal privacy protection, public education, delivery of services and illegal content. CAIP members are individually responsible for responding to their customers' inquiries and complaints.

A list of CAIP members is available on its website:

<http://www.cata.ca/Communities/caip/CAIPMembershipList.html>.

For wireless consumers, the Canadian Wireless Telecommunications Association (CWTA) has also developed a Code of Conduct in relation to matters of customer service and support. This code of conduct includes commitments related to complaint resolution, personal privacy protection, clarity of contract terms and ensuring consumers understand the various plans offered.

#### *A BDU Complaint Agency?*

With respect to BDU consumer issues, there is no third-party entity/organization that presently provides assistance with respect to consumer complaints.

In the early 1990's, the cable companies established standards for conduct and customer service which were administered by the CTSC.<sup>92</sup> The CTSC dealt with complaints with respect to cable service, such as concerns about quality of service and billing. However, in April 2006, the CTSC was disbanded. Since then, complaints filed with the Commission about quality of service and billing are forwarded to the appropriate licensee for resolution.

The complaints related to BDU services received by the Commission fall mostly in areas related to distribution, billing, service provision and quality.

#### **Triggers**

The trigger would be an assessment of whether the existing mechanism for responding to consumer complaints about BDU services is insufficient and whether, as a result, an independent agency with a mandate to respond to BDU complaints is required; if such an agency is found to be necessary, an assessment would also be required as to how the agency should be structured and funded as well as what its membership, mandate, functions, and powers should be.

#### **Future considerations**

In a converged environment, a BDU that is also a TSP provides both telecommunications and broadcasting distribution services. As a result, many communications consumers subscribe to a bundle of services, which may also be called a "triple" or "quadruple" play package—this may take the form of a bundle comprised of any combination of the following telecommunications and broadcasting services: wireline telephone service, wireless service, VoIP service, Internet service and BDU service—from the same service provider.

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<sup>91</sup> <http://consumerinformation.ca/app/oca/ccig/main.do?language=eng>

<sup>92</sup> The CTSC was described on the PIAC website as follows, "For over 10 years, the Council has been providing assistance to customers and their cable company by helping them work together to resolve conflicts relating to the various aspects of the service provided by member companies."

From the perspective of a “triple” play package consumer, there may be merit in the existence of a consumer complaint agency that could effectively resolve complaints about all aspects of a bundle of broadcasting and telecommunications services. Such an agency would have to have the mandate to resolve both BDU and TSP related complaints.

However, there would need to be an assessment of the size of the need or demand for resolution of BDU service-related issues. If the need or demand was found to be significant, there would also need to be an assessment of the potential gains in efficiency and effectiveness that could result by merging these functions with an existing agency, rather than by creating a new and distinct BDU complaints agency.

## **Appendix 5 – Next generation access**

### **Issue**

The future deployment and regulatory treatment of NGAs in Canada.

### **Background**

The term “NGN” refers to networks capable of providing broadband access and transport at significantly higher bandwidths than those widely available at present. Among telecom service providers, NGNs may take the form of next generation DSL (e.g. ADSL2+, VDSL, VDSL2), FTTH or FTTN/VDSL solutions. Cable operators may provide NGN access using DOCSIS 3.0 technology.

#### **VDSL**

VDSL allows for maximum upload and download speeds of 50 Mbps, rising to 100 Mbps for VDSL2. However, these optimal speeds are available only within close proximity to the source; as the local loop lengthens, speeds degrade significantly. Implementation of these technologies requires upgrades both to DSLAMs and to end-user equipment. Companies establishing next generation DSL networks typically take advantage of their capacity to offer an IPTV service, in addition to high-speed Internet, thus allowing them to compete with cable companies across all service offerings, including broadcasting distribution.

#### **FTTH**

FTTH involves replacing existing telephone networks with optical fibre to each subscriber. While FTTH is considered “future proof” as a result of its capacity for tremendous speeds that exceed anticipated requirements, the cost of laying fibre to each subscriber’s home has proven a barrier to implementation. The use of passive optical networks, which use beam splitters at neighbourhood nodes to serve up to 64 customers through fibre split from a single feeder cable, can reduce this cost somewhat. However, this solution means that available bandwidth is then also shared among households served by the common feeder cable.

#### **FTTN/VDSL**

FTTN solutions reduce implementation costs of FTTH significantly, by extending fibre networks only to nodes located within a specified distance of each home being served. The access from the node to the home is typically achieved via VDSL, which, as explained above, is well-suited to maintaining high speeds over short distances.

#### **DOCSIS 3.0**

Cable providers can achieve NGN speeds through the DOCSIS 3.0. This system relies on existing hybrid fibre-coaxial networks, along with software and minor hardware upgrades, to offer speeds of up to 160 Mbps downstream and 120 Mbps upstream (shared among the households using a common feeder cable), without the expense of laying new cable.

### **Current regulatory framework**

In Telecom Order 99-592,<sup>93</sup> the Commission forbore from regulating the retail Internet access rates of all carriers not already subject to previous forbearance orders, concluding that the retail Internet services market was sufficiently competitive to protect the interests of users. To foster competition in the high-speed market, however, *wholesale* rates for high-speed Internet services, both via cable modem and DSL, have been regulated since the late 1990s. Nonetheless, in 2008, cable companies accounted for 55% of all residential high-speed

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<sup>93</sup> Forbearance from retail internet services, Telecom Order 99-592, 25 June 1999.

Internet subscriptions in Canada, with an additional 39.5% retained by the incumbent telecommunications companies (operating in-territory). Other TSPs thus held only 5.5% of subscriptions, although it should be noted that there has been gradual improvement since 2003, when these competitors claimed only 2.7% of the residential high-speed Internet market.<sup>94</sup>

In Telecom Decision 2008-17,<sup>95</sup> the Commission restructured the regulatory framework for wholesale services, including by revising the definition of essentiality and reviewing the pricing principles applicable to mandated services. The Commission was guided in its decision by the Governor in Council's *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives*, P.C. 2006-1534, 14 December 2006, which called on the Commission to review mandated access to wholesale services with a view to increasing incentives for investment and innovation in competing telecommunications network facilities.

With that in mind, the Commission redefined essential services, facilities or functions as those (i) required as an input by competitors to provide telecommunications services in a relevant downstream market, (ii) controlled by a firm with upstream market power such that denying access would likely result in a substantial lessening or prevention of downstream competition, and (iii) whose functionality cannot practically or feasibly be duplicated by competitors. The Commission emphasized that even absent a finding of essentiality, a service could be mandated for other reasons, such as maintaining cost-effective competition, or ensuring competitors have the means to make use of another mandated service. In all, the Commission identified six categories into which existing wholesale services could be classified: essential, conditional essential, conditional mandated non-essential, public good, interconnection and non-essential subject to phase-out. All but the last category involve mandated wholesale access.

#### **Classification of wholesale services**

Among the Commission's classifications in Telecom Decision 2008-17 were its categorizations of ADSL access services as conditional essential, aggregated ADSL services as conditional mandated non-essential and high-speed fibre-based access and transport (including Ethernet) as non-essential subject to a phase-out period three year for transport and five years for access. It should be noted that the Commission described its task in Telecom Decision 2008-17 as classifying *existing* wholesale services into the six categories identified; the decision did not predetermine whether next generation access services should be considered essential or otherwise be mandated. This was confirmed in Telecom Decision 2008-116,<sup>96</sup> discussed below.

In Telecom Regulatory Policy 2009-34,<sup>97</sup> the Commission affirmed its classification of aggregated ADSL services, denying MTS Allstream Inc.'s request that they be considered conditional essential, a move that would have lowered the company's wholesale price. MTS Allstream Inc. also filed a review and vary application with respect to the classification of Ethernet access and transport services, which the Commission had denied in Telecom Decision 2008-118.<sup>98</sup> However, Telecom Regulatory Policy 2009-34 did amend Telecom

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<sup>94</sup> CRTC, *Communications Monitoring Report 2009*.

<sup>95</sup> *Regulatory policy - Revised regulatory framework for wholesale services and definition of essential service*, Telecom Decision 2008-17, 3 March 2008.

<sup>96</sup> *Regulatory policy - Forbearance framework for new non-essential wholesales services*, Telecom Decision 2008-116, 11 December 2008.

<sup>97</sup> *Requests to review and vary directives in Telecom Decision 2008-17 related to the provision of central-office-based wholesale ADSL access service and aggregated ADSL access service*, Telecom Decision 2009-34, 26 January 2009.

<sup>98</sup> *Regulatory policy - MTS Allstream Inc. - Application to review and vary certain determinations in Telecom Decision 2008-17 regarding the classification of wholesale Ethernet services*, Telecom Decision 2008-118, 11 December 2008.

Decision 2008-17 to remove CO-based ADSL access services from the conditional essential classification, as a result of an application from BCE, SaskTel and Télébec. One of the applicants' arguments was that restricting the markup on CO-based ADSL access services would discourage CLECs from upgrading their own networks with next generation DSLAM equipment (because they could access the ILECs' DSLAM at essential facility rates) and would similarly discourage the ILECs from investing in upgrades (since wholesale ISPs would automatically have the right to access the new infrastructure).

Having rescinded the initial classification, the Commission subsequently issued Telecom Notice of Consultation 2009-261,<sup>99</sup> announcing a May 2010 proceeding to examine the appropriateness of mandating both CO-based ADSL and head-end-based cable wholesale high-speed access services, in accordance with the regulatory framework set out in Telecom Decision 2008-17. The proceeding will review the feasibility, configuration and, if mandated, the classification of such services.

### **Mandated speed matching**

In June 2008, Cybersurf Corp. submitted an application to requesting that ILECs be required to provide wholesale ADSL services at the same speeds as those available to the ILECs' own retail Internet customers, in light of the Commission's determinations in Telecom Decision 2008-17 to categorize aggregated ADSL as conditional mandated non-essential. In Telecom Decision 2008-117,<sup>100</sup> the Commission approved Cybersurf's application in part, finding that without a matching service speed requirement, competition in the retail high-speed Internet market would be significantly curtailed. It thus directed the ILECs to provide matching speeds and file the appropriate proposed tariffs where a competitor so requested. This decision was clarified in Telecom Order 2009-111,<sup>101</sup> which specified that any service provided over a path that includes copper facilities is subject to the matching speed requirement, even if the network also contains fibre components. On 10 December 2009, Telecom Decision 2008-117 and Telecom Order 2009-111 were referred back to the Commission by the Governor in Council's Order in Council P.C. 2009-2007.<sup>102</sup> They will be re-visited as part of an extension in scope to Telecom Notice of Consultation 2009-261.

### **Regulation of new wholesale services**

In Telecom Decision 2008-116,<sup>103</sup> the Commission rejected Bell, SaskTel and Télébec's argument that any new wholesale service that the Commission considered non-essential should be immediately forborne since new services do not require any "phase-out" to allow competitors to find alternatives. Instead, the Commission stated that it would assess applications to forbear from regulatory future wholesale services, including the need for a transition period, on a case-by-case basis.

### **Drivers and triggers**

NGAs provide users not only with higher access speeds, but also better quality service, including lower latency, less jitter and fewer dropped packets. As such, NGN growth will be

<sup>99</sup> *Notice of hearing - Proceeding to consider the appropriateness of mandating certain wholesale high-speed access services*, Telecom Notice of Consultation 2009-261, 8 December 2009. Amended by Telecom Notice of Consultation 2009-261-1, 4 August 2009; Telecom Notice of Consultation 2009-261-2, 11 August 2009; Telecom Notice of Consultation 2009-261-3, 12 August 2009; Telecom Notice of Consultation 2009-261-4, 2 September 2009; Telecom Notice of Consultation 2009-261-5, 2 October 2009; Telecom Notice of Consultation 2009-261-6, 27 October 2009; and Telecom Notice of Consultation 2009-261-7, 23 October 2009.

<sup>100</sup> *Cybersurf Corp.'s application related to matching service speed requirements for wholesale Internet services*, Telecom Decision 2008-117, 11 December 2008.

<sup>101</sup> *Cybersurf's application related to the implementation of Telecom Decision 2008-117 regarding the matching speed requirement*, Telecom Order 2009-111, 3 March 2009.

<sup>102</sup> [http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/crtc-2008-117-pc2009-2007.pdf/\\$FILE/crtc-2008-117-pc2009-2007.pdf](http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/crtc-2008-117-pc2009-2007.pdf/$FILE/crtc-2008-117-pc2009-2007.pdf)

<sup>103</sup> *Regulatory policy – Forbearance framework for new non-essential wholesales services*, Telecom Decision 2008-116, 11 December 2008.

driven by public demand for activities that benefit from these improvements, notably video entertainment, gaming and videoconferencing. Significantly higher speeds are not currently being driven by direct consumer demand; few residential users actually need 100 Mbps to enjoy their Internet experience at present. Rather, the current impetus is largely competitive marketing and the recognition that if history is any guide, applications will quickly develop to take full advantage of any increases in capacity once the infrastructure is in place. Moreover, on a competitive level, the telecommunications companies' desire to compete with cable companies in the broadcasting and VOD market will likely fuel their move to FTTN/VDSL, as this will allow them to offer an IPTV service with greater capacity and potential for interactivity than their current satellite television offerings.

#### **Video entertainment**

One of the leading drivers of NGN expansion is expected to be IP-based video entertainment, including both "over-the-top" services that deliver video over the public Internet (e.g. YouTube or iTunes) and IPTV, delivered over private networks by telephone companies seeking to compete with cable companies in the provision of television services. While a standard YouTube video requires a bitrate of only 200-400 Kbps, standard definition broadcasting quality IPTV requires 2 to 3 Mbps and HD video can require 8 to 12 Mbps. Advancements in compression techniques can lower these demands, but may reduce image quality. In the longer-term, larger screen sizes are expected to contribute to demand for even higher resolution video and the development of "ultra-HD" standards. Quality of service characteristics are also important in the video entertainment context, especially with IPTV, which must closely resemble the cable television experience, and therefore cannot accept significant buffering.

#### **Gaming**

The growth of online games is a significant trend in video gaming, whether PC or console-based. At present, most games are not bandwidth intensive (well under 1 Mbps, often only 100 Kbps), as graphics and sounds are created via the users' own hardware. That said, rapid real-time games still require low latency that can benefit from higher-quality NGN connections. Moreover, bandwidth improvements would enable "cloud-based" games, which are rendered on servers and piped into users' homes. Bandwidth-intensive, cloud based games are considered advantageous because the games are located on remote servers requiring authentication which means that users are not required to purchase expensive consoles or computer hardware and because the games have the potential to reduce piracy, by eliminating the need for a copy of the software in players' homes.

#### **Video telecommunications**

While some basic video communications services require only a symmetrical connection of 384 Kbps, higher-quality systems better suited to business use require 2-5 Mbps, and "telepresence solutions" featuring conference setups with multiple video streams require a symmetrical connection of 10 to 20 Mbps. Video communication can also be applied to the provision of medical care, with telehealth bandwidth requirements ranging from 512 Kbps for basic monitoring functions to 10 Mbps for remote telerobotic surgery, which also requires stringent and consistent quality of service (latency is acceptable as long as it is consistent throughout the procedure). Advanced experimental systems for providing remote urgent care assistance can require bitrates in the hundreds of Mbps and low latency. Scientific imaging demands bitrates of up to 1 Gbps.

### **Future regulatory considerations**

#### **Wholesale treatment**

Telecom Decision 2008-17's regulatory phase-out for non-essential services, including fibre-based access and transport, may have an impact on NGN access, as competitors fear being shut out of the technology needed to offer next generation services. While the Commission retains the ability to classify new NGN access services as "essential," the likelihood of a

service meeting the relevant test depends on how the “relevant downstream market” is defined; if it is defined broadly to encompass all broadband access, the existence of other substitutable tariffed services and competition would influence against next generation access being considered essential.

### **Digital divide**

A digital divide exists in Canada between urban and rural areas with respect to the availability of broadband Internet service. The network investments needed to provide next generation access will likely exacerbate this division because money will most logically be spent in areas with high population density which provide the greatest return on investment for sunk costs. Potentially significant is rural Canada’s unequal access to new terrestrial telecommunications solutions. Users in remote areas arguably stand to benefit the most from technologies with the potential to bridge great distances, yet it is these same users who may have to make do with slower, poorer quality service if it is left to the market alone to determine access.

### **Disparate opportunities for cable and telecom operators**

In residential urban areas, Cable companies are better placed than telecommunications companies to offer next generation speeds in the near-term, given the lesser expense associated with upgrading to DOCSIS 3.0 as compared to FTTN/VDSL. Estimates for the fixed costs of upgrading to DOCSIS 3.0 are as low as U.S.\$100 per home, compared to U.S.\$300 per home passed for FTTN. Cable companies will also be able to use their coaxial networks to add interactive functionality to the provision of video-on-demand content, such as through the Tru2way technology. As such, depending on the degree of lag, Canada may see a shift in market share arising from a lack of consumer choice as cable Internet providers offer services and speeds not yet available through the phone companies.

### **Priority and timeframe**

With respect to the current availability of next generation access in Canada, Vidéotron Ltd., Cogeco Inc. and Shaw Communications Inc. are already deploying DOCSIS 3.0, with Vidéotron Ltd. offering 30 and 50 Mbps service in Laval and Montréal and Shaw Communications Inc. offering 100 Mbps service in Saskatchewan, with additional urban centres planned. Rogers Communications Inc. is also beginning to implement DOCSIS 3.0, with download speeds of 50 Mbps and upload speeds of 2 Mbps.

While some greenfield developments, especially new apartment buildings, are receiving fibre all the way to the premises, the ILECs generally favour a FTTN/VDSL approach. That said, they will likely be watching the situation in the U.S., where Verizon Communications Inc. has undertaken a large-scale rollout of FTTH. Bell Canada’s FTTN/VDSL coverage is currently largely restricted to Toronto and Montréal. Bell Aliant’s FTTN/VDSL2 service is already available to 240,000 homes in Atlantic Canada, and it has announced plans to bring FTTH to 70,000 homes and businesses in Fredericton and Saint John by mid-2010 in partnership with the Government of New Brunswick, touting the project as the first in Canada to cover an entire city with FTTH technology. TELUS Communications Inc. is also expected to undertake an upgrade initiative.

With respect to its wireline network, an ILEC can typically only offer television service where it has built out an FTTN network. In so doing, it is able to compete as a facilities-based wireline entrant in the television distribution market. However, where an ILEC is required to provide wholesale high-speed access service over its own FTTN network, it may not be able to provide its IPTV service to an end-user subscribing to a wholesaler’s high-speed Internet service over the same line. Having to provide wholesale high-speed access on FTTN facilities

may therefore affect the ILECs' delivery of television services in competition with the cable companies.<sup>104</sup>

As alluded to above, applications requiring top-end next generation speeds are not yet prevalent, so service providers' gradual introduction of next generation services is likely adequate. However, once next generation speeds become widespread in urban areas, the expected development of applications and services dependant on such speeds risks leaving behind rural Canadians, who may need regulatory or governmental intervention to ensure they can share in the new digital experience. In light of this, and in keeping with international trends, universal access to broadband and deployment of NGNs are required topics for inclusion in any national digital strategy the Canadian government may be contemplating.

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<sup>104</sup> Submission of Bell Aliant Regional Communications, Limited Partnership, Bell Canada, and Télébec to *Proceeding to consider the appropriateness of mandating certain wholesale high-speed access services*, Telecom Notice of Consultation 2009-261, 22 June 2009.

## **Appendix 6 – Universal Broadband Access**

### **Issue**

Developing the most effective and efficient ways to enable universal broadband access for all Canadians. If it is appropriate for broadband access to become part of the BSO,<sup>105</sup> then there will be a need to establish the appropriate regulatory framework to ensure all Canadians have access to affordable broadband service. This may include ensuring access for lower-income Canadians as well as those who live in rural and geographically remote regions. A challenge for such a framework is to balance the sometimes opposing requirements to stimulate investment in innovation, to stimulate competition and to motivate service providers to provide services to economically less-attractive market segments.

### **Background**

Many countries have recognized the importance of ensuring their citizens have broadband access. As stated in the 2006 TPRP Report, “broadband telecommunications access will be an essential enabler of the economic and social welfare of individual Canadians, regardless of where they live....” Broadband has an important role in public safety, community development, healthcare delivery, education, worker training, economic growth and other national purposes. The following are some examples of the benefits realized from broadband access for all Canadians:

- improved education and new opportunities for post-secondary education; students and teachers have access to more education materials; students living in rural and remote areas have increased distance-learning choices;
- improved health care via e-health applications, enabling better collaboration and sharing of patient files; this is of particular benefit to patients in rural and remote areas, enabling medical professionals in these areas to have access to diagnostic services and consultation with colleagues in urban areas;
- new business and improved business opportunities including telecommuting, e-commerce and online marketing; broadband access is also leading to improved productivity and competitiveness of resource-based, agricultural and manufacturing industries, ultimately boosting GDP;
- better access to government services (such as e-tax filing), improved access to information about public policy issues and increased opportunities to participate in civic activities;
- access to news and information. The Internet is becoming a key way to obtain news and information, taking market share away from traditional media and providing access to a wider source of international information;
- greater diversity of voices and another platform for Canadian content; the broad range of entertainment services and applications enabled by broadband access provides new methods of cultural expression; and
- the potential to remove location as a restriction for participation in society, which enables better social inclusion for individuals living in remote communities.

The benefits of universal broadband access are not only realized domestically, they also ensure that all Canadians can participate in the global information society.

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<sup>105</sup> A BSO, or basic service objective for Canadian telecommunications services was established in *Telephone service to high-cost serving areas*, Telecom Decision 99-16, 19 October 1999 to establish a reasonable level of service and to determine how, in a competitive era, all Canadians may gain access to that service.

The importance of broadband to Canada was recognized as early as 1995, with the formation of the Information Highway Advisory Council. Since that time, there have been a number of programs with the mandate to provide high-speed access to institutions and citizens, including:

- the National Broadband Task Force, an initiative of the Government of Canada, which was established in 2001 by the Minister of Industry. The initiative sought "to map out a strategy for achieving the Government of Canada's goal of ensuring that broadband services are available to businesses and residents in every Canadian community by 2004.";
- the Broadband for Rural and Northern Development Pilot Program, which was announced by Industry Canada in 2002 to assist communities without high-speed data services access, focussing specifically on First Nations, rural, remote and northern communities. This program was promoted as the first step toward the Government of Canada's commitment to high-speed connectivity for all Canadian communities by 2005;
- the National Satellite initiative, a joint program between Infrastructure Canada, Industry Canada and the Canadian Space Agency. It was launched in 2003 to provide high-speed broadband Internet access services via satellite to communities located in the far- and mid-north, and in isolated or remote areas of Canada. The Government of Canada contributed \$155 million toward the costs of implementing this initiative to purchase and access satellite capacity;
- various provincial initiatives to ensure access to high-speed Internet, such as, Alberta SuperNet (focused on education and healthcare), Connect Ontario, Quebec's Villages Branches program, Manitoba's Broadband Project Office, Connect Yukon, Broadband BC, Nunavut Broadband Taskforce, Newfoundland Government Broadband Initiative and Broadband for Rural Nova Scotia. Saskatchewan, Nova Scotia and Newfoundland all announced programs in late 2008 to encourage broadband facility construction; and
- Canada's Economic Action Plan, which provided \$225 million to Industry Canada over three years to develop and implement a strategy to extend broadband coverage to as many unserved and underserved households as possible, beginning in 2009-2010.

### **Current regulatory framework**

The Commission does not regulate consumer (retail) Internet access<sup>106</sup>—speed and prices are left to market forces. As well, broadband access is not included in the telecommunication BSO, in the carriers' obligation to serve or in the local subsidy program, all of which are measures to ensure reliable and affordable telephone service to all Canadians, whether urban, rural or remote. The BSO reflected the level of service available to most Canadians i.e. 97%) when it was established in 1999, and included dial-up access to Internet at local rates.

The Commission has taken decisions to encourage investment in broadband infrastructure in underserved areas. In Telecom Decision 2006-9,<sup>107</sup> the Commission determined that initiatives 1) to expand broadband services to rural and remote communities, and 2) to improve accessibility to telecommunications services for persons with disabilities were appropriate uses of funds in the deferral accounts, which resulted in telecommunications providers investing \$300 million to provide broadband access to rural subscribers in BC, Alberta, Manitoba, Ontario, and Quebec. The Commission considered that expanding broadband services into rural and remote communities would enhance their social and

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<sup>106</sup> The Internet access market includes both dial-up and high-speed/broadband Internet access.

<sup>107</sup> *Disposition of funds in the deferral accounts*, Telecom Decision 2006-9, 16 February 2006.

economic development, and would be an effective way to reduce the disparity that exists between urban communities and most rural and remote communities.

### Drivers

In 2008, virtually all Canadians living in urban areas and 78% of Canadian households in rural areas had access to broadband services (excluding satellite). Most Canadian households (94%) were able to access broadband services using landline facilities; DSL-based broadband Internet access service was available to 84% of Canadian households and cable modem-based broadband Internet access service was available to 80% of households. Fixed wireless was available to over 75% of households. Satellite facilities can extend this reach to virtually all Canadian households.<sup>108</sup>

Despite wide availability of broadband access in 2008, only 69% of Canadian households actually subscribed to high-speed Internet access. Slightly more than half of all households (52%) subscribed to broadband services of more than 1.5 Mbps, and 41% subscribed to service with speeds above 5 Mbps.<sup>109</sup>

There is a significant difference in Internet use between the highest income households and lowest income households. Statistics Canada found that a digital divide by income continues to exist. It reported in 2008 that 91% of people in the top 20% of household incomes (greater than \$95,000) had access to the Internet while only 47% in the bottom 20% (less than \$24,000) had access.<sup>110</sup> While this report does not indicate where they use the Internet, it is not unreasonable to assume that significantly more upper income Canadians subscribe to Internet services than lower income Canadians.

Canada has historically been a leader in telecommunications and led the OECD in the deployment and uptake of broadband in 2000. Examples of Canada's leadership are as follows:

- Canada was the first country to deploy DSL technology;
- Canada was the second country to deploy cable modem technology; and
- until 2003, Canada ranked second in terms of broadband penetration measured as broadband subscribers per 100 inhabitants.

However, recently Canada's leadership has been slipping internationally in terms of broadband penetration and deployment of broadband technologies.

According to the OECD, in 2003 Canada was second among OECD countries in the number of subscribers to high-speed Internet services per 100 inhabitants (15.1 subscribers per 100 inhabitants). By December 2008, Canada had dropped to tenth (29.0 subscribers per 100 inhabitants). Canada was 20<sup>th</sup> in penetration growth for broadband subscribers from 2007 to 2008 (1.82) and 29<sup>th</sup> out of 30 in terms of broadband penetration CAGR (15.7%). Countries that had similar, but slightly lower, broadband penetration in 2003 (Switzerland, the Netherlands, Denmark, Sweden and Iceland) have had CAGRs ranging from 25.3% to 34.7% and have overtaken Canada. It must be acknowledged that these countries generally have higher population densities and significantly smaller geographic areas to cover with fewer topographical barriers making it easier to provide affordable broadband.

One reason for Canada's slippage in terms of broadband penetration may be price which is reflected in the higher uptake of broadband services by higher-income households than lower-income households. Broadband in Canada is relatively expensive as compared with

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<sup>108</sup> CRTC, *Communications Monitoring Report 2009*.

<sup>109</sup> *Ibid.*

<sup>110</sup> Statistics Canada, *The Daily - Canadian Internet use survey*, 12 June 2008.

other countries, as shown in the OECD Broadband Portal.<sup>111</sup> The OECD study shows that Canada ranked 28<sup>th</sup> out of 30 in terms of average broadband monthly price per advertised Mbps (in U.S. dollars purchasing power parity) with an average price of more than double that paid in 18 other countries surveyed. Even when looking at the lowest prices and highest prices paid per Mbps, Canada ranked 28<sup>th</sup>.

Canada also lags behind other countries in terms of broadband speed. Canada's average broadband access speed is 5.0 Mbps which exceeds the OECD baseline of 256 Kbps but falls short of the 100 Mbps vision of other countries. In terms of average advertised broadband download speed, Canada ranked 25<sup>th</sup> in 2008, and with an average advertised broadband download speed of 6 Mbps, was below the OECD average of 17 Mbps. It appears that the speed gaps between Canada and other OECD countries are increasing as other countries are moving to FTTH, which can deliver the fastest speeds. The OECD Broadband Portal indicated that the penetration of FTTH in Canada in 2008 was virtually nil.

Finally, without an appropriate device, homes cannot access broadband service even if it was available. This is a concern for the lower-income households. According to Statistics Canada in 2006 more than 97% of highest income houses had a computer, whereas only 45% of households in the lowest income group had one.

### **Priority and timeframes**

As noted previously, broadband access has been an issue for the Canadian government since at least 1995. Since that time, there have been a variety of programs to bring broadband access to all Canadians, often with a focus on remote areas and underserved populations. Canadian Provincial governments are also taking an active role in expanding the availability of broadband services. However, in spite of these initiatives, Canada is falling behind OECD countries.

Another factor driving the timing of improving broadband access is the development of next generation Internet applications. Anecdotally, it can be observed that as faster access speeds become available, new services are developed that are dependent on those speeds. As the new services displace older services, individuals who do not have Internet access at the appropriate speed cannot easily use the increasing number of Internet-based services that rely on faster speeds.

### **International practices**

The governments of many countries have initiated programs to bring affordable broadband access to all of their citizens. Many international jurisdictions, including Australia and the U.K., are planning to spend money in their universal broadband plans as part of their stimulus spending in response to the current economic situation. Highlights of programs in a few of the countries follow below.

#### U.S.

The American Recovery and Reinvestment Act of 2009 allocated U.S.\$7.2 billion in grant and loan funding for broadband/wireless initiatives for rural, unserved and underserved geographies. Under the broadband stimulus plan, the FCC is responsible for developing and presenting to Congress in February 2010 a strategy to bring high-speed broadband Internet into every American home, with a focus on rural broadband and broadband in low-income urban neighborhoods. The regulation has been written specifically to allocate money to community-based groups— nonprofits, local and state governments are given priority for this funding. For-profit carriers, such as Verizon Communications Inc., AT&T Inc. and the cable

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<sup>111</sup> The OECD Broadband Portal provides access to a range of broadband-related statistics gathered by the OECD in regard to OECD member countries.

companies, have to show that they are working in the public interest before they may become eligible for funding for a particular project

#### U.K.

The Digital Britain report outlines plans to deliver 2 Mbps broadband service to all households by 2012 and to include this level of service in a Universal Service Commitment on telecommunications operators. The commitment is expected to be achieved through a combination of upgrades to British Telecom's fixed-line network, mobile broadband and satellite broadband. The U.K. intends to rely on the market to drive next generation broadband, expecting two-thirds of the population to be served via competitive forces, without government intervention. The report proposed using £200 million in public funding to deliver the Universal Service Commitment using a mix of technologies: DSL, fibre to the street cabinet, wireless and possibly satellite infill. In order to ensure that more economically unattractive areas have access to next generation broadband networks, the U.K. plans to create an independent next generation fund based on a £6 per year levy imposed on all fixed copper lines.

#### France

Initially, the French government did not focus on funding broadband infrastructure and services, either in rural or in urban areas; the government's e-Europe plan 2005, established in 2000, envisioned that the private sector would take the lead role in broadband development. However, in 2001, the government realized that market forces alone would not provide the desired level of broadband service, and it launched programs to provide loans at reduced rates to local municipalities for broadband development, eventually allowing local authorities to become telecommunications operators as long as there were no other available broadband providers. More recently, the French government unveiled Digital France 2012 in October 2008, announcing that "every French citizen, wherever they live shall, by 2010 enjoy the right of access to broadband Internet at affordable prices of around €35 per month, inclusive of the equipment needed for access."<sup>112</sup>

#### Australia

In April 2009, the Australian government announced that it would invest AUD\$43 billion over eight years to build and operate an open access FTTH National Broadband Network as a private-public partnership. The network will provide download speeds of up to 100 Mbps to 90% of Australian homes and businesses. The remaining 10% will be served using wireless and satellite technologies with a minimum speed of 12 Mbps by 2012. The network will provide high-quality voice, data and video services, including symmetric services such as HD video-conferencing.

#### South Korea

South Korea has one of the highest broadband penetration rates in the world and is a world leader in the deployment of FTTH and FTTN. The South Korean government established a national broadband development strategy (the "Korean Information Infrastructure Plan") aimed at providing broadband access by 2005 for 84% of South Korean households with rates of 30 Mbps by the end of 2006 and 50 to 100 Mbps by the end of 2010. In 2009, 95% of South Koreans had broadband access. The South Korean government deployed two other development programs in the mid-1990's, Broadband Convergence Network and IT839,<sup>113</sup> both of which focused on creating a ubiquitous network to enable customers to communicate anytime through a variety of devices, including fixed and mobile phones, personal computers, home networks and other appliances. The South Korean government's national broadband strategy includes direct and indirect support for broadband infrastructure development, including loans and other incentives. It spent U.S.\$24 billion to construct a national high-speed public backbone network. Finally, the South Korean government made loans at

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<sup>112</sup> <http://assisesdunumerique.tivipro.tv/category/accueil/>

<sup>113</sup> IT 839 Strategy is South Korea's policy approach to promote the country's broadband development.

preferentially low interest rates to companies that were building new infrastructure and extended funding to address the problem of lack of broadband in rural areas.

### **Future regulatory considerations and approaches**

Any Canadian policy or regulatory approach must:

- encourage competition in areas already served by broadband access providers which will ultimately drive down prices;
- encourage broadband deployment in rural and remote areas (areas that are economically unattractive);
- encourage (and not discourage) ongoing investment into NGN infrastructure;
- maximize the availability of spectrum for next generation wireless networks; and
- be competitively symmetric and technically neutral.

Based on the Governor in Council's *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives*, P.C. 2006-1534, 14 December 2006, the CRTC must

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

It is clear that market forces have not been sufficient to drive affordable broadband access into rural and remote parts of Canada nor to ensure affordable broadband access for lower-income Canadians; thus, regulatory approaches could be considered. These approaches could include expanding the basic service objective to include broadband access and introducing an obligation to provide broadband access to all Canadians.

For the most remote areas, satellite may be the only reasonable option. Regulation or government subsidies may be required to ensure that this type of Internet service is affordable.

As for the urban areas of Canada, regulatory approaches must stimulate competition so that market forces ultimately drive down prices. It is likely that existing services providers (mainly the ILECs and cable companies) will pressure each other in urban areas, especially as more wireless broadband services (such as LTE or WiMax) become available. In addition, the Commission should continue to mandate unbundling of broadband access until withdrawing the mandated access to the facility would not likely result in a substantial lessening or prevention of competition in the downstream market.

## **Appendix 7 – Privacy protections**

### **Issue**

Developing the appropriate regulatory framework to contribute to the protection of the privacy of Canadians.

### **Background**

Privacy issues have been raised across sectors regulated by the Commission, including telecommunications, broadcasting and converged activities that touch on both. The Commission has the authority to deal with privacy challenges that are emerging from the digital environment.

### **Current regulatory framework**

The CRTC's responsibility for privacy in telecommunications is well-established. One of the objectives of *section 7(i) of Telecommunications Act* is “to contribute to the protection of the privacy of persons”). In furtherance of this policy objective, the Commission also has explicit authority with respect to unsolicited telecommunications (Section 41). To implement this provision, the Commission has imposed requirements to protect the personal information of individuals by means of tariffs and other measures (Caller ID, telemarketing rules, and subscriber information). (The definition of “personal information” is subject to varying legal interpretations that are dependent on the situation. For example, in certain contexts, a phone number may be considered personal information, such as when it is part of the Do Not Call List. In other situations, a phone number may not be considered personal information.) E-mail and IP addresses are similarly subject to interpretation as personal information.

However, as noted by the 2006 TPRP Report, telecommunication service providers that are not facilities based (re-sellers) are exempt from obligations that apply to Canadian facilities-based carriers<sup>114</sup>. The Commission indirectly imposes a number of conditions on resellers through the underlying tariffs and agreements between the resellers and the LECs providing services to them. However, the report acknowledges that such indirect authority may not allow the Commission to take appropriate corrective action in the event of a regulatory breach.

The *Broadcasting Act* has no provisions for protection of privacy. The notion of privacy is raised by the definition of broadcasting, which includes the phrase “does not include any such transmission of programs that is made solely for performance or display in a public place” that is broadcast is only private consumption of programs, by members of the public. Privacy has not been an issue to date in conventional broadcasting, because the point-to-multipoint nature of this service precludes the collection of personal information.

The Commission regulates on matters of privacy in the context of other federal instruments and administrative bodies. Two federal laws, the *Privacy Act* and PIPEDA provide specific protections.

The *Privacy Act* imposes obligations on some 150 federal departments and agencies (including the CBC and the Commission) to limit collection, use and disclosure of personal information.

PIPEDA applies to personal information held by private commercial and non-profit sectors, retail, publishing companies, service industry, manufacturers and other provincially regulated

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<sup>114</sup> *Exemption of Resellers from Regulation*, Telecom Public Notice 93-62, 4 October 1993.

organizations. If a province is considered to have “substantially similar” legislation, it may be exempted from PIPEDA; currently, B.C., Alberta and Quebec have separate provincial privacy legislation.

Oversight of both federal Acts with jurisdiction over abuses of business practices and commercial conduct is carried out by the OPCC, whose mandate is to: receive and investigate complaints; assess compliance with the two Acts through audit and review activities of private-sector organizations; issue reports to federal government institutions/private sector as well as recommendations to assist in remedying situations and prevent errors in handling personal information; review and advise on privacy impacts of new/existing government initiatives; provide legal and policy expertise regarding privacy to guide evolving legislation; promote public awareness and compliance with the two Acts; monitor trends; identify issues in privacy practices to federal government institutions and private sector organizations; and work with privacy stakeholders from Canadian and international jurisdictions.

As privacy stakeholders, the Commission and the OPCC cooperate with each other on matters of privacy. While the OPCC’s investigative powers are limited to being reactive and complaints-driven, the Commission has ex ante regulatory powers under the *Telecommunications Act* to impose measures to protect privacy, based on specialized knowledge of communications networks and telecommunications technology. The TPR Report found no compelling reason to recommend changes to the legislated mandates of the Commission and OPCC with regard to privacy; however, it recommended that a “bright line” be established between the responsibilities of regulatory authorities.

As a complement to CRTC regulation, industry self-regulation is a tool to support privacy protection. Self-regulation is useful a approach when an issue—such as privacy—is too sensitive or resource-intensive to warrant direct government regulation, and where the application of flexible codes based on principles may be more appropriate than strict rules.

In 1993, in response to the deployment of set-top boxes to consumers’ premises, the Commission encouraged the cable industry to self-regulate on privacy as follows:

The universal deployment of digital terminal equipment will provide the cable industry with the ability to obtain valuable information regarding subscribers’ viewing patterns, tastes and preferences. This capability gives rise to a number of issues concerning subscriber privacy. The Commission believes strongly that addressable technology should not be used to collect, use or disclose viewing and other information in a manner that infringes on the privacy of subscribers. In this regard, the Commission notes that the Department of Communications has recently established privacy principles for the telecommunications industry, and considers that these principles are also relevant to the cable industry. The Commission invites the CCTA to assess these principles with a view to their adoption by the cable industry.<sup>115</sup>

In response, the former CCTA developed its own set of voluntary codes and standards for issues such as privacy, customer service and other matters that affect the cable industry. However, the CCTA ended its operations in 2006.

Self-regulation in telecommunications is also administered by the CCTS. The mandate of the CCTS is limited to facilitating resolution of various consumer issues related to telecommunications service, but these do not include privacy.

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<sup>115</sup> *Structural Public Hearing*, Public Notice 1993-74, 3 June 1993.

## Drivers and triggers

In broadcast distribution, emerging technologies may pose risks to the privacy of Canadians. With respect to television advertising, software firms are developing new advertising strategies and formats that are centred on targeting, addressability and interactivity to increase the effectiveness of ads. The aim is to make them more relevant and appealing to a viewer's interests. These advertising "solutions" are now being tested in the U.S. by cable and satellite operators broadcasting on the digital platform by providing advertising messages to specific demographic targets using the subscriber's set-top box as a key component. The set-top box stores information on viewing habits and builds a profile of the subscriber that can be reported to the advertiser; this aggregate data may be considered to be personal information. One such software provider claims that consumer privacy is maintained and that the software "anonymizes" viewers' information. Viewer patterns are not matched to addresses and the advertiser claims to not collect or use personally identifiable information. A further safeguard is the fact that BDUs will not want to risk a breach of trust with their subscribers by misusing their personal information. Nonetheless, privacy watchdogs remain concerned that consumers are being monitored, and this perception may influence the take-up of this technology by the BDUs.

In the wireless environment, devices are increasingly enabled with GPS technology. While this enables the implementation of advanced emergency 911 services, privacy concerns are raised by the ability to track the movement of users. Such location-based mobile services raise the potential for service providers to make valuable information about users available to advertisers. The commercial message is based on the recipient's geographic location and delivers commercial services/products in that location. The potential for these services to amass detailed information on a person's activities could raise issues related to fundamental freedoms of assembly, expression and association set out in the *Canadian Charter of Rights and Freedoms*. More concretely, the personal security of an individual could be at risk if their detailed movements can be tracked.

The Internet traffic management proceeding raised privacy concerns related to the use of DPI. In Telecom Regulatory Policy 209-65 the Commission allows ISPs to use DPI to collect information for the purpose of network planning and engineering; however, the Commission also established privacy provisions to protect personal information. Specifically, all primary ISPs have been directed to not use personal information collected for the purposes of traffic management for any other purpose and not to disclose such information. As well, primary ISPs which provide wholesale service to secondary ISPs are required to include in their service contracts or other arrangements with secondary ISPs the requirement that the latter not use for other purposes personal information collected for the purposes of traffic management and not disclose such information.

## Future regulatory considerations

The collaboration between the Commission and the Privacy Commissioner may need to increase due to the potential for privacy issues arising in the digital environment, given the complementary expertise, mandates and powers. The Commission can take advantage of rules to require privacy protection from regulated companies. Were the Commission to have *ex-post* regulatory powers, enforcement of privacy could be strengthened.

## Priority and timeframe

Targeted advertising is undergoing trials in selected U.S. markets and is expected to be introduced in Canada within a few years. The future of targeted advertising in Canada will depend, in part, on whether the Commission permits regulated undertakings to use it.

Location-based services are increasingly available. Ovum forecasts that smartphone shipments will reach 406.7 million, representing 29% of all cell phones, by 2014.<sup>116</sup> With greater capabilities in both running native applications and viewing real Internet websites, smartphones have increased usage and user expectations for mobile content. Along with the expanding handset base, users are downloading more applications.

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<sup>116</sup> <http://mobithinking.com/blog/latest-mobile-stats>, *Mobile Web: latest facts and stats forecast a rosy outlook*, 28 August 2009.

## **Appendix 8 - Table of Acronyms**

ACTRA	The Alliance of Canadian Cinema, Television and Radio Artists
ADSL	Asymmetric Digital Subscriber Line
ARPU	Average Revenue Per User
ATSC	Advanced Television Systems Committee
ATSC-M/H	Advanced Television Systems Committee - Mobile/Hand-Held
AWS	AWS Advanced Wireless Services
BCE	Bell Canada Enterprises
BDU	Broadcasting Distribution Undertaking
BSO	Basic Service Objective
CAGR	Compounded Annual Growth Rate
CAIP	Canadian Association of Internet Providers
CBC	Canadian Broadcasting Corporation
CBSC	Canadian Broadcast Standards Council
CCTA	Canadian Cable Television Association
CCTS	Commissioner for Complaints for Telecommunications Services
CLEC	Competitive Local Exchange Carrier
CO	Central Office
CPI	Consumer Price Index
CPM	Cost Per Thousand Impression
CRTC	Canadian Radio-Television & Telecommunications Commission
CTSC	Cable Television Standards Council
CWTA	Canadian Wireless Telecommunications Association
DAB	Digital Audio Broadcasting
DOCSIS	Data-Over-Cable Service Interface Specification
DPI	Deep Packet Inspection
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
DTH	Direct-To-Home
DTV	Digital Television
DVB-H	Digital Video Broadcast - Handheld
FCC	Federal Communications Commission (U.S.A)
FTTH	Fibre-to-the-Home
FTTN	Fibre-to-the-Node
GPS	Global Positioning System
GSM	Global System for Mobile Communications
HD	High Definition
HSDPA	High-Speed Downlink Packet Access
HSPA	High Speed Packet Access
HTML	Hyper Text Markup Language
IBOC	In Band on Channel
ILEC	Incumbent Local Exchange Carrier
IPTV	Internet protocol television
IP-VPN	Internet Protocol – Virtual Private Network
ISP	Internet Service Provider
ITU	International Telecommunication Union
Kbps	Kilobit per second
LBS	Location-Based Service
LTE	(Wireless) Long Term Evolution

Mbps	Megabit per second
MediaFLO	Media Forward Link Only
MTM	Media Technology Monitor
MTS	Manitoba Telephone System
MVNO	Mobile Virtual Network Operators
NAS	network access services
NGA	Next generation access networks
NGN	next generation networks
NPVR	Network Personal Video Recorders
OECD	Organisation for Economic Co-operation and Development
OMVC	Open Mobile Video Coalition
OPCC	Office of the Privacy Commissioner of Canada
OTA	Over-the-air
PBIT	Profit Before Interest and Taxes
PC	Personal Computer
PDA	Personal Digital Assistant
PIAC	Public Interest Advocacy Centre
PIPEDA	Personal Information Protection and Electronic Documents Act
PPP	Purchasing Power Parity
PPV	Pay-Per-View
PSTN	Public Switched Telephone Network
PVR	Personal Video Recorder
QMI	Quebecor Media Inc.
SMS	Short Message Service
T-DMB	Terrestrial Digital Multimedia Broadcasting
TPI	Telephone Price Index
TPRP	Telecommunications Policy Review Panel
TSP	Telecommunications Service Provider
UMTS	Universal Mobile Telecommunications System
VDSL	Very High Speed Digital Subscriber Line
VOD	Video-on-Demand
VoIP	Voice over Internet Protocol
WiMAX	Worldwide Interoperability for Microwave Access
WNP	Wireless Number Portability
WSP	Wireless Service Provider