

Wireless Communications: A Strong Signal for a Stronger Canada

CWTA Input to the Digital Economy Strategy
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cwta

Association canadienne
des télécommunications sans fil

Canadian Wireless
Telecommunications Association

acts

Executive Summary

The wireless industry in Canada makes profound contributions to the economy and social fabric of the country. The industry delivers an economic benefit of some \$39 billion annually, creates nearly 300,000 high-value jobs, and contributes numerous national social programs to enhance civic participation and public safety in communities across the country.

The move to next generation wireless networks is already well underway in Canada, driven by Canadians' heavy adoption and usage of wireless technologies, and the convergence of those technologies with high-speed broadband access. Globally, the mobile Internet is growing faster than the desktop Internet grew in the 1990s.¹

Canadian wireless carriers invested \$9.3 billion in wireless capital and spectrum costs in 2008 and 2009. As a result, numerous independent studies over recent months have noted Canada's competitive position in terms of broadband penetration (currently leading the G7 in the number of homes with access to multiple broadband providers) and wireless download speeds. Key conclusions from these studies are outlined below.

Data traffic on wireless networks is expected to double every year through 2014, as more Canadians use more devices that consume more bandwidth. To avoid network traffic jams that would otherwise compromise the economic and social benefits inherent in advanced wireless broadband networks, wireless carriers will be under constant pressure to increase the already heady pace of capital and spectrum investments.

As a critical element of its Digital Economy Strategy, the Government must act immediately to make available additional spectrum to help alleviate the impending network data crunch. Government can also play a key role in reducing and removing policy and regulatory disincentives to continued network investment. In this regard, as part of its Digital Economy Strategy, the Government should:

- Immediately commence the licensing process for the 700 MHz and 2500 MHz spectrum bands; and take all necessary steps to identify at least 500 MHz of additional spectrum that should be made available for commercial wireless services.
- At the very least, avoid any increase to already excessive spectrum licence fees (the most expensive in the G7) and other regulatory fees and charges paid by wireless carriers.
- Eliminate the outdated condition of licence requiring spectrum licensees to spend 2% of revenues on a pre-defined list of R&D activities.
- Take steps to assure the public that the standards and policies in place adequately address the concerns of citizens, including taking a more prominent role in explaining the safeguards inherent in Health Canada's Safety Code 6.
- Encourage public safety agencies to include a calculation of the opportunity cost of the use of the spectrum and to incorporate spectrum valuations in investment decisions.

The Government must act immediately to make available additional spectrum to help alleviate the impending network data crunch.

At the same time, Government can implement much-needed policy reforms that would strengthen the business case for further investment in next generation wireless networks. In this regard, as part of its Digital Economy Strategy, the Government should:

- Immediately begin consultations towards a 21st-century spectrum policy framework (including seeking comments on the Cave Report commissioned by Industry Canada over three years ago).
- Introduce an Accelerated Capital Cost Allowance for broadband network equipment (scaled to encourage investment in underserved areas).
- Support the creation of a Wireless Centre of Excellence.
- Permit those officials regulating the wireless sector to access the full range of wireless applications and services available in Canada.
- Encourage departments and agencies to make full use of wireless technologies in the services they deliver to Canadians.
- Review Canada's cryptography policy to ensure its application reflects the current state of the marketplace for encryption-containing technologies, and does not hinder the efficient operation of multi-national equipment manufacturers located in Canada.
- Encourage the adoption of standards-based, commercially available technologies by public safety agencies.

Introduction

CWTA is pleased to provide its comments as the Government embarks on this critical process to define and refine those policy elements that will shape Canada's Digital Economy Strategy for the next five to seven years.

CWTA is the voice of the wireless industry in Canada. Its membership reflects the growing imprint of wireless technology on the Canadian economy and society: wireless carriers, domestic and international manufacturers of wireless handsets and equipment, content and application creators, and business-to-business service providers who combine to deliver a world-class wireless ecosystem that provides an increasingly important technological backbone for all aspects of life in Canada.

The growth of the wireless industry in Canada since its launch twenty-five years ago has prompted a communications revolution that impacts all Canadians. In a country as vast as Canada, any technology that brings us closer makes us stronger. This has never been truer

than today, when Canada boasts some of the most advanced wireless networks in the world, including more of the fastest HSPA+ networks than any other country in the G8.

Canada's wireless industry makes a remarkable contribution to the country's economy. The total value of direct GDP contribution, output multiplier and consumer surplus is a significant economic value of \$39 billion. Roughly 300,000 people are employed as a result of the wireless industry, based on 2008 data.ⁱⁱ

The macro-numbers alone give some measure of the breadth and reach of the wireless industry in Canada:

- There are currently 57 licensed wireless operators in Canada, some operating nationally, others regionally and locally. Together these providers cover 99% of the Canadian population with wireless service, offering 93% of the population high-speed mobile broadband on 3G networks.ⁱⁱⁱ

- At the end of December 2009, Canadian wireless phone subscribers numbered 22.8 million. Seventy-five percent of Canadian households have at least one cell phone.^{iv}
- Canadians are heavy users of wireless devices, consuming on average over 4000 minutes per subscriber per year – higher than the average in European countries where mobile penetration rates are much higher.^v
- Canadians sent more than 35 billion text messages in 2009, over 1500 per subscriber.^{vi}
- Twelve percent of households now use a cell phone as their only household telephone.^{vii}

Between 2010 and 2017, Canada and the rest of the world will experience the ubiquitous convergence of the two most important enabling technologies of the 21st century so far: wireless communications and broadband Internet. The result will be – and is already – the enabling of significant productivity and prosperity gains across all aspects of the Canadian economy and society.

The move to next generation networks is already well underway in Canada, the product of massive and unprecedented private-sector investments in an infrastructure no less critical to Canada's future than investments in railways, roads, bridges, airports and seaways in previous centuries.

A measure of the importance of the role Canada's wireless industry plays in the Canadian economy is the fact that as other sectors of the economy were retrenching during the recession, wireless carriers were investing: an

estimated \$3.16 billion in 2009,^{viii} on the heels of \$1.85 billion in 2008 (and in addition to \$4.25 billion in 2008 AWS auction proceeds – proceeds that went straight to the Government's consolidated revenue fund). In other words, as other sectors were shedding jobs to stay afloat, the wireless industry was hiring in all regions of the country, while contributing billions directly to Government coffers.

The Government's *Consultation Paper on a Digital Economy Strategy for Canada* sets out a number of key questions for stakeholders and policy makers to consider, including the central question "Should Canada focus on increasing innovation in some key sectors or focus on providing the foundation for innovation across the country?"

CWTA submits that the latter option is the right course: wireless broadband is already a foundational and enabling technology that provides productivity and prosperity enhancements in all walks of Canadian life. Despite immense geographic challenges Canada is already a world leader in the deployment of advanced wireless broadband networks.

The balance of this submission situates Canada's wireless industry within the economic life of the country, outlines some key trends and pressures on the horizon, and recommends some concrete steps the Government of Canada can take to develop an environment that encourages continued investment in next generation wireless networks in Canada thereby strengthening the foundation for innovation across the country.

Canada boasts some of the most advanced wireless networks in the world, including more of the fastest HSPA+ networks than any other country in the G8.

The Move to Next Generation Wireless Networks is Already Well Underway in Canada

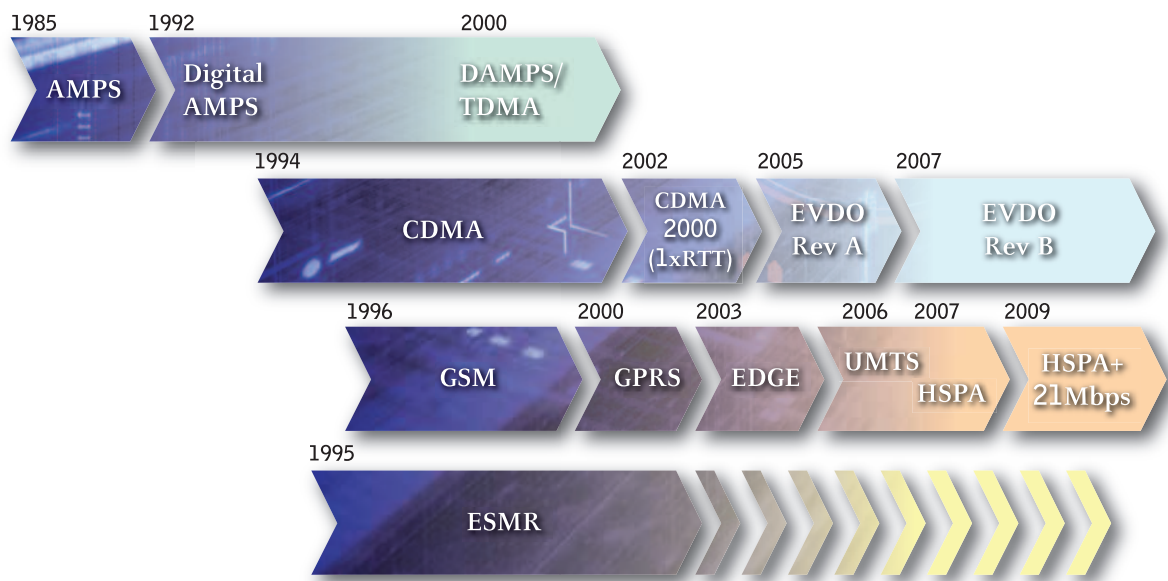
Since 1985, wireless technology in Canada has been constantly evolving. There have been no fewer than 12 complete network builds and re-builds as new standards allowing improved network performance have become commercially available. The following illustration captures the steady progression along several unique technology paths, as Canadian wireless networks have been continually upgraded towards more robust signal strengths and speeds.

The infrastructure required to deliver wireless voice and data service requires massive and continual investment. Canadian wireless service providers have invested nearly \$16 billion in capital expenditures since 2001, or more than

\$21 billion when one includes the cost of acquiring spectrum at auction.^{ix}

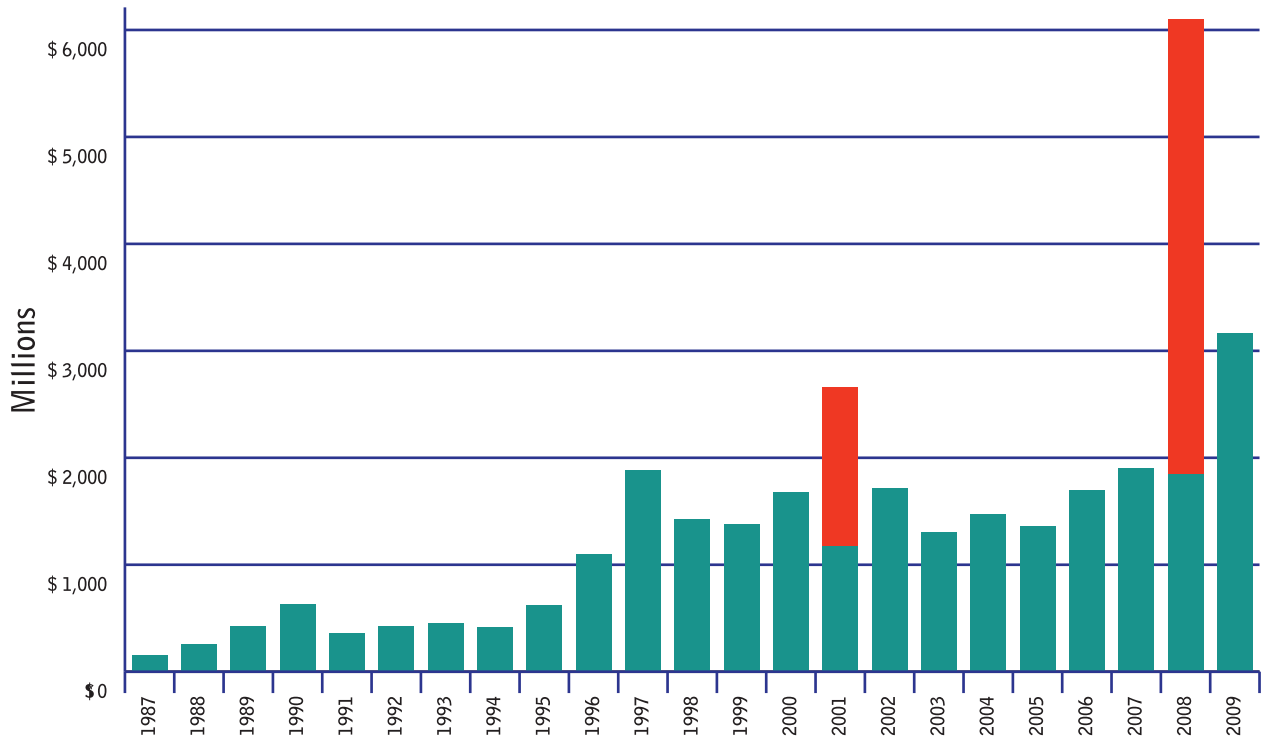
As demand for increased access to advanced wireless services increases in coming years, so too will the demand for investment in spectrum and networks to ensure adequate bandwidth to meet that demand. The following chart illustrates the historic rate of capital investment by Canadian wireless carriers in network infrastructure and other assets. The red lines indicate additional investments in spectrum licences. These cumulative investments have produced our current state of world-class network architecture today.

Wireless Technology Evolution in Canada 1985-2010



Source: Ovum

Wireless CAPEX in Canada 1987-2009



Note: Spectrum auction payments are reflected in red.

Source: CWTA; IDC Canada estimate for 2009

A recent study by Professor Leonard Waverman at the Haskayne School of Business at University of Calgary looks at comparative ICT investment (including wireless and wireline broadband) across developed countries. According to this study, Canada currently leads the G7 in broadband penetration with a high proportion of households with direct access to multiple broadband providers, outperforms many European countries in terms of download speeds, and scores highly in terms of "high quality broadband" infrastructure.^x

Where Canada compares less favourably in the Waverman study is in use of advanced networks by Canadian business. As this study suggests, Canadian wireless network operators have made the investments in broadband infrastructure that will propel the benefits of broadband technology across Canadian society.

Despite this comparative gap in adoption of advanced broadband technology by Canadian businesses, investments in next generation networks have allowed the wireless sector in Canada to steadily increase its overall contribution to the economic and social life of Canada.

The Canadian Wireless Sector Delivers Tremendous Value to the Canadian Economy and Society

An April 2010 study by UK consulting firm Ovum quantifies the economic impact of the wireless industry in terms of Canadian GDP, jobs and productivity gains for both the supply and demand sides of the Canadian economy.^{xi}

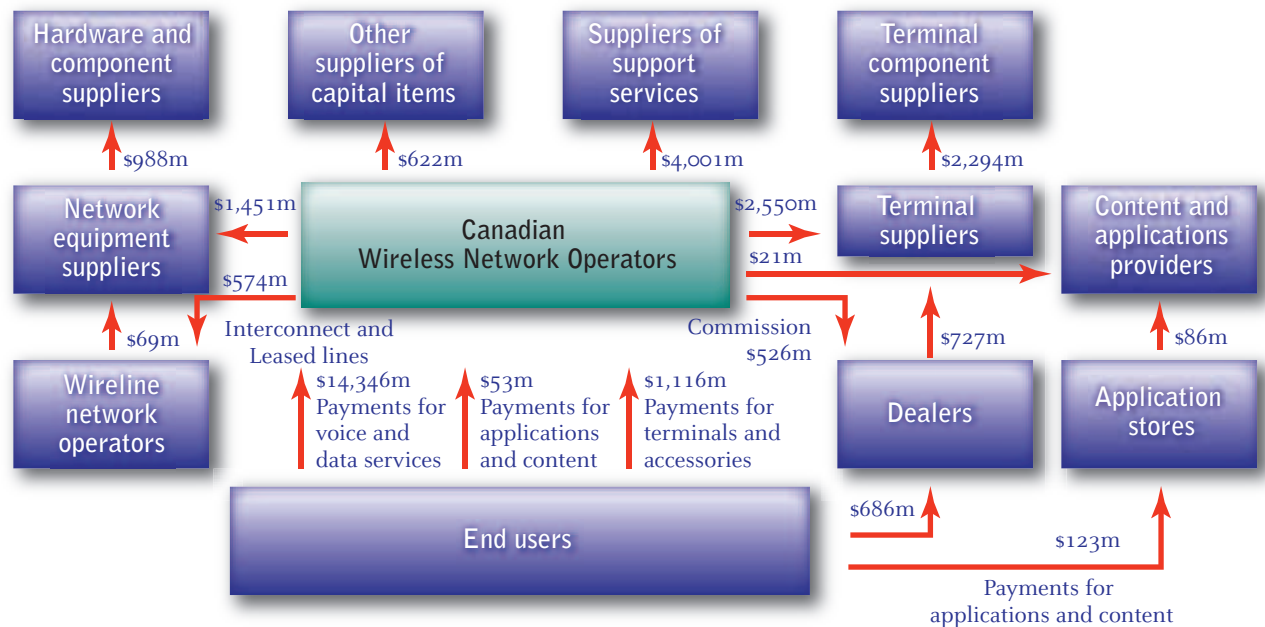
In terms of quantifiable economic benefits, the report finds that wireless communications generated a total economic value of \$39 billion for the Canadian economy in 2008, while delivering significant employment benefits as well:

- Over \$16 billion in terms of direct contribution to GDP through the sale of goods and services (comparable to the \$20 billion GDP of Newfoundland and Labrador).
- An additional \$14 billion benefit from economic flow-through to contributing suppliers in the

value chain (including content creators, accessory providers, independent retail partners etc.).

- Nearly \$9 billion in 'consumer surplus' – the additional benefit or value that Canadians assign to wireless services, above and beyond what they actually pay for them.
- Over 294,000 Canadian jobs as a result of the wireless industry, after taking into account direct, indirect and induced employment. These jobs have an average salary level of \$59,000, compared to the national average of \$42,640.
- The value-added per employee in the wireless sector is estimated at \$195,000 per year, compared to national average of \$71,000.

The Value-Chain for Wireless Services in Canada

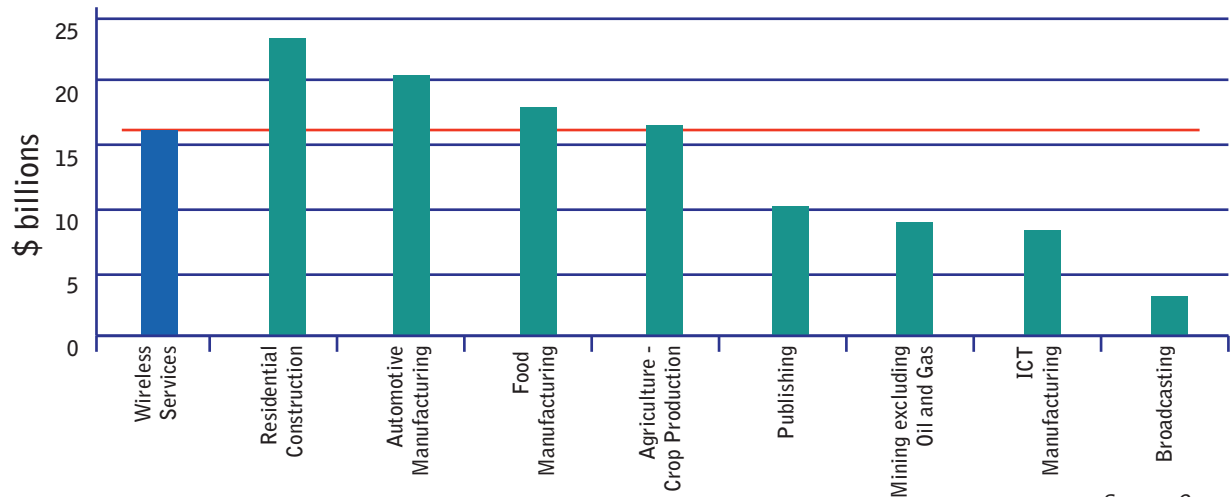


Source: Ovum

The report also compares the relative position of the wireless sector in Canada to other major industry sectors, in terms of direct economic contribution to GDP, finding that the contribu-

tion of the wireless industry to Canadian GDP is practically on par with the agricultural sector, and exceeds that of the mining industry (excluding oil and gas extraction).

Comparison of Contribution to GDP 2008 – Selected Sectors



Source: Ovum

In addition to significant economic benefits, the wireless industry also delivers numerous environmental, public safety and other charitable programs that benefit Canadian society in all regions of the country.

Amber Alert – Working with public safety and Amber Alert coordinators across the country, CWTA spearheaded the May 2010 launch of a free Wireless Amber Alert service in Canada. Customers of most Canadian wireless service providers can now sign up to get alerts as text messages on their wireless devices. See: www.wirelessamber.ca. The Minister of Public Safety issued a statement applauding the wireless industry for this initiative.

Recycle My Cell – Formally launched in 2009, Recycle My Cell is an umbrella program bringing together multiple corporate recycling programs operated by Canadian carriers and handset manufacturers. Through the program, consumers can return end-of-life handsets to virtually any wireless retail outlet, or by mail, completely free of charge. Over 1.2 million end-of-life cell phones have been collected through participating programs since 2006. The handsets are then purchased by ISO-certified processors for refurbishment or recycling. Proceeds from those purchases directly support food banks, family and environmental charities across the country – over \$500,000 in charitable contributions in 2009 alone. See: www.recyclemycell.ca. The program

received statements of support and formal recognition from 7 provincial Environment Ministers in 2009.

E9-1-1 – More than half of all 9-1-1 calls are now made via mobile phone. As of February 2010, the wireless industry and the public safety community now provide further location identification information for Enhanced 9-1-1 (E9-1-1) service for cell phone users. Previously, a 9-1-1 call taker would have received the cellular phone number and the location of the nearest cell site or cell tower when a call was placed to 9-1-1 from a cell phone. Now, in addition to the phone number, the call taker will receive more precise information based on the longitude and latitude coordinates of where the handset is located. This service is now available in most parts of the country where landline 9-1-1 service exists. See: <http://cwta.ca/CWTASite/english/E911P2.html>

Mobile Giving – CWTA and Mobile Giving Foundation Canada work with Canadian wireless service providers to enable charitable donations via mobile devices. All of the funds raised through these mobile campaigns flow to the recipient charity. For example, over \$500,000 was raised in \$5 and \$10 mobile giving donations for Haitian earthquake relief, raising more in three days than the entire first year of mobile giving in the United States. There are currently more than 70 charities registered with this

program. The Minister of Industry issued a public statement congratulating the wireless industry for the success of this initiative. See: <http://www.mobilegiving.ca>.

TextEd.ca – In January 2010, the Canadian Centre for Child Protection, with the support of CWTA, launched the official pilot of TextEd.ca, an innovative and interactive website designed to teach teens to be safe, responsible and respectful users of texting technologies. The program launched with the

objective of receiving 100 Canadian orders for classroom teacher's kits during the pilot year. The pilot was an overwhelming success with more than 350 Grade 7 classes across Canada participating and it went international with participation by schools in a number of countries. The French-language version of the website won a 2010 cybercrime prevention award from Francopol, the international francophone network for police training. See: www.texted.ca.

Use of Advanced Wireless Devices in Canada will Increase Exponentially in Coming Years

Experience has shown that the best way to encourage the use of advanced networks is to build them. Advances in network architecture encourage increased use of those networks, and vice versa. Various observers have forecast dramatic increases in the use of advanced wireless handsets and other bandwidth-intensive wireless devices over the next five to seven years.

Advanced smartphone handsets represent the near-future of personal computing. Globally, Deloitte estimates that in 2010, smartphones will continue to take marketshare from personal computers. In 2009 smartphone sales outstripped the sale of portable PCs. By 2011, smartphone sales will eclipse sales of both portable and desktop PCs, and by 2012, manufacturers could ship 500 million smartphones internationally.^{xii}

Given the expected growth in smartphone sales relative to PCs, it is not surprising that Morgan Stanley predicts that more users will connect to the Internet via mobile phones than desktop computers by 2014, citing a current mobile Internet adoption rate faster than the desktop internet adoption rate in the 1990s.^{xiii}

Cisco estimates that in 2010, 31% of Canadian cell phone users were using a smartphone, a figure it expects to see rise to 50% by 2014.^{xiv}

Along similar lines, U.K.-based market research firm TNS Global Telecoms reports that 55% of Canadians expected to buy a smartphone in the first half of 2010, up from 19% in the first half of 2009. 21% of Canadians expected to buy a wireless 'netbook' by June 2010, compared to 22% who expected to buy a more traditional laptop, and just 5% who expected to buy a desktop PC.^{xv}

The number and types of devices that connect to wireless networks is about to skyrocket. In addition to smartphones, basic-feature cellphones, laptops, tablets, netbooks, e-readers, digital still cameras, digital video cameras, and in-car entertainment and safety systems, the next wave of wireless-enabled devices is expected to include virtually anything that contains a processor.

David Clark (a professor at the Massachusetts Institute of Technology, and one of the original architects of the internet), has predicted over *1 trillion* networked devices within 20 years – ranging from children's toys to golf balls.^{xvi} Measured against the projected world population at that time, we will be looking at more than a thousand wireless connections per every person on earth.

This explosion in the use of advanced wireless networks to connect both traditional and non-

traditional communications devices will undoubtedly bring additional economic and societal benefits to Canadians over the next 5 to 7 years. As Canada approaches 100% wireless penetration, with more people using more

devices that consume more bandwidth, significant business and policy challenges will emerge that must be addressed under any comprehensive national digital strategy.

Canada Faces Data Traffic Jams

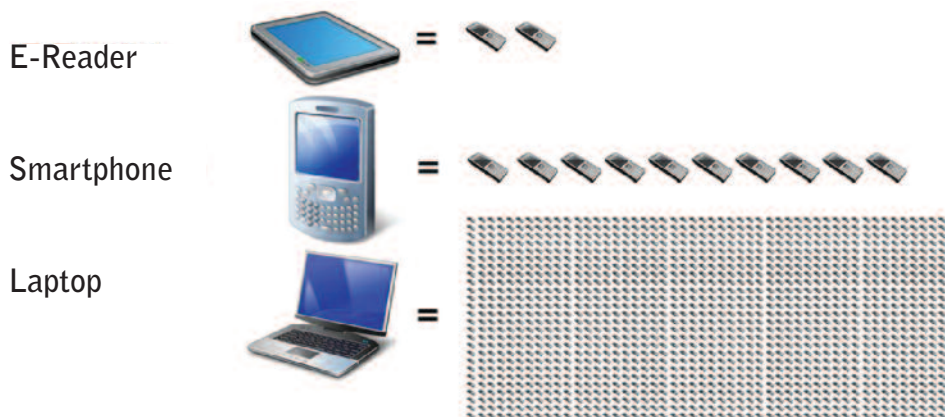
Globally, mobile data traffic increased 160% between December 2008 and December 2009, and will double every year between 2010 and 2014, increasing 39 times between 2009-2014.^{xvii} Canadian networks are far from immune to these pressures, given the exponential increase in Canadians' adoption and usage of advanced wireless devices in the next few years.

These devices themselves pose a traffic-management challenge for wireless network operators. One device does not necessarily occupy the same amount of bandwidth as another device. Generally speaking, the more advanced the functionality of the device, the more bandwidth it consumes, and the more it costs for carriers to service and support.

Where basic-feature cell phones were most often used for voice and text traffic, according to Cisco, by 2014, 66% of data traffic will be bandwidth intensive video delivered on a range of wireless-enabled devices, which are rapidly becoming mini-computers with voice capability rather than telephones with computing capability.^{xviii} The following comparison puts this into perspective:

- An e-reader, such as the Amazon Kindle, generates as much data traffic as two basic-feature cell phones.
- A smartphone generates as much data traffic as 10 basic-feature cell phones.
- A netbook (or wireless-enabled laptop) generates as much data traffic as 130 smartphones, or 1300 basic-feature cell phones.

Comparative Data Traffic Generated by Everyday Wireless Devices



Source: Cisco

If the volume of motor-vehicle traffic was expanding at the same rate as the volume of mobile data traffic, Canada would need to expand the TransCanada Highway from 4 lanes in 2010 to 64 lanes in 2014. This analogy gives some measure of the financial challenge facing Canada's wireless network operators as they race to keep bandwidth supply ahead of bandwidth demand.

The Federal Communications Commission (FCC) Broadband Plan is calling for 500 MHz of additional spectrum.^{xix} This is something that the US wireless industry endorses. The FCC plan also seeks to increase opportunities for unlicensed devices and innovative spectrum access models; expand incentives and mechanisms to reallocate or repurpose spectrum to higher-valued uses; and improve the transparency of spectrum allocation and utilization.

President Obama has endorsed this recommendation^{xx} and has directed executive departments, agencies, and offices of the US government to move expeditiously to achieve this objective, ordering the National Telecommunications and

Information Administration to collaborate with the FCC to a complete, by October 1, 2010, a specific plan and timetable for identifying and making available 500 MHz of spectrum.

The International Telecommunications Union is also actively pursuing the identification of additional spectrum for mobile broadband.

Government should act expeditiously and immediately commence the much-anticipated licensing processes for the 700 MHz and 2500 MHz spectrum. In relation to the 700 MHz licensing process, CWTA would clearly be concerned with any delays to the DTV transition and is encouraged by comments made by CRTC officials that the DTV transition date will not change.

More generally, following the lead established by the US, Government should take all necessary steps to identify additional spectrum that could be made available for commercial wireless services, especially spectrum that is currently under utilized. This process should include a careful review of the Government's own use of spectrum resources.

Government Should be Looking for Ways to Reduce and Remove Policy and Regulatory Disincentives to Network Investment

Wireless carriers in Canada (and ultimately their customers) have to absorb disproportionately high regulatory costs. These costs act as a drag on the amount of capital available for required network investment and innovation. Excessive spectrum licence fees, other regulatory charges, and outdated conditions of licence

make the business case for investment in next generation networks in Canada harder than it needs to be.

Spectrum Licence Fees

Wireless carriers currently hold licences for less than 2% of licensed radio spectrum in Canada,

Recommendation 1: Immediately commence the licensing process for the 700 MHz and 2500 MHz spectrum bands; and take all necessary steps to identify at least 500 MHz of additional spectrum that should be made available for commercial wireless services.

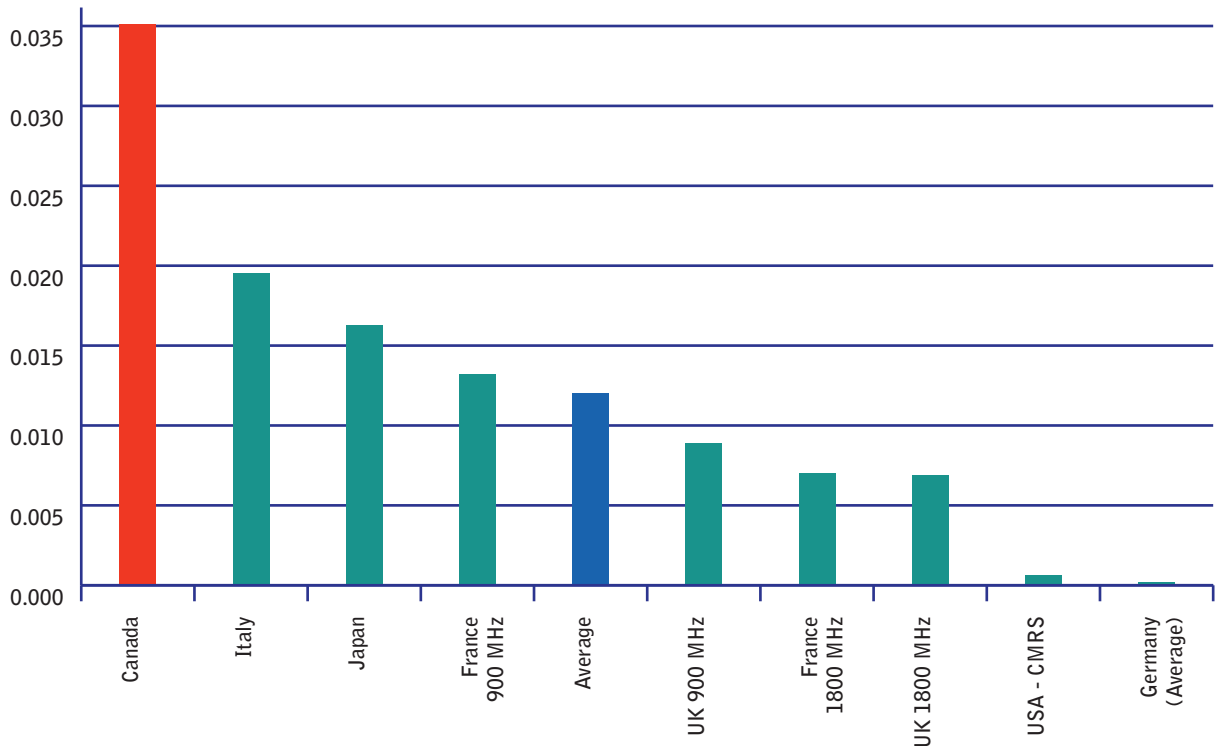
yet pay roughly half of all spectrum licence fees collected by the Government for use of radio spectrum – nearly \$130 million in 2010, and more than \$1 billion since the current fee regime was established in 2003. The industry has paid more than \$2 billion in licence fees since the launch of cellular services in 1985. No other spectrum user in Canada carries that kind of regulatory overhead simply to acquire the spectrum necessary to operate their networks.

Canadian wireless carriers pay some of the highest spectrum licence fees in the world – by far the highest in the G7, and second only to Australia in the developed world (see Appendix

A for an international comparison of spectrum licence fees).^{xxi} In 2010, Canadian carriers will pay nearly \$130 million in spectrum licence fees. If the 2009 U.S. fee model were applied in Canada, the industry would pay less than \$4 million in licence fees. In this regard, CWTA notes that the recent Plan for a Digital Canada, issued by the Senate Committee on Transport and Communications, recommends that “Industry Canada, in establishing policies to allocate and price spectrum, consider pricing regimes in other countries, especially those in the United States.”^{xxii}

Administrative Spectrum Licence Fees

G7 Countries — \$/MHz/Pop



Source: Ovum

Since the launch of cellular service in Canada in 1985, Industry Canada has modified its objectives for spectrum licence fees a number of times. It has transitioned from a policy of “full recovery of spectrum management costs,” to one of generating revenue that exceeds costs to “meet the Government’s fiscal and social policy objectives,” to one of reflecting the economic

value of the spectrum resource being consumed, and most recently, to one that will earn a “fair return” for the Canadian public.

In March 2009 Industry Canada initiated a public consultation process around the renewal of PCS and cellular spectrum licences that expire on March 31, 2011.^{xxiii} In that consultation document, the Department clearly states its

intention to impose a fee that reflects “a fair return to the Canadian public.”

CWTA strongly submits that in seeking to determine what constitutes a “fair return to the public” Industry Canada should take into full account the economic and social benefits that accrue to Canadians from wireless carriers’ use of licensed spectrum (as it does for other spectrum licensees, such as broadcasters).

For example, when the Government reached an agreement in October 2009 with private broadcasters to reduce the Part II fees paid by the industry, the Minister of Canadian Heritage noted that:

The broadcasting industry (including radio; conventional, pay and specialty television; and cable and satellite distributors) contributes approximately \$20 billion annually to the Canadian economy. This agreement is another example of our Government showing leadership and working together with industry in the best interest of our country, our economy and all taxpayers.^{xxiv}

In other words, recognizing that the broadcasting industry contributes significantly to the Canadian economy, the government reduced the annual licence fees paid by broadcasters. Furthermore, on the recommendation of the Minister of Canadian Heritage and the Treasury Board, the Government chose “not to seek past amounts owing by the industry which amount to about \$450 million” as they considered it not to be in the public interest to do so.

Given that the wireless industry in Canada delivers an economic benefit of some \$39 billion per year from its use of publicly-owned spectrum – nearly twice that of the broadcasting industry – one might assume that the same ‘economic benefit’ policy logic that applies to broadcasters would apply to wireless carriers as well. Economic and societal contributions to Canada are clearly a factor when the Government considers the fees it charges to broadcasters and should equally be a consideration in setting wireless carriers’ licence fees.

Any proposal to implement “market based” fees for the renewed PCS and cellular licences concerns not only wireless carriers, but the investment community as well. Bank of America and Merrill Lynch issued a bulletin in July 2009 characterizing the proposal as “resetting annual fees to market levels” and cautioning, if implemented, that the new fees would effectively shave 3-4 basis points from the margins of wireless carriers, with commensurate reductions in per-share value for investors.^{xxv} Because share price is a reflection of return for shareholders, regulatory anchors on share prices ultimately raise the cost of capital and weaken the business case for continual investment in next generation wireless networks.

Spectrum is the most fundamental input to any wireless network, and therefore to any future digital economy strategy. Raising taxes on spectrum at the outset of a digital economy strategy makes about as much sense as raising taxes on steel at the outset of the Government’s recently-announced National Shipbuilding Strategy,^{xxvi} or applying a new levy to asphalt at the outset of a national highway building strategy: it would be completely counterproductive relative to the Government’s broader policy objectives.

CWTA notes that the wireless industry’s reactions to the Government’s Digital Economy Strategy as a whole will be assessed through the lens of what happens with respect to cellular and PCS licence renewals. Proposals to raise spectrum licence fees from their already excessive levels will signal to the wireless industry that the Government is not fully committed to achieving the policy objectives set out in its Digital Economy Strategy discussion paper.

Runaway Regulatory Fees and Charges

In addition to excessive annual spectrum licence fees currently paid, and the prospect of additional licence fees after March 2011, Canada’s wireless carriers also carry additional regulatory fees and other compliance costs that divert hundreds of millions of dollars

away from network investment annually, and that ultimately must be absorbed by Canadian consumers. For example, these include the local contribution subsidy for service in high-cost serving areas and the CRTC telecom fees assessed on wireline and wireless carriers to cover the cost of CRTC operations.

At current rates, total regulatory fees and charges (including spectrum licence fees) paid by Canadian wireless carriers between 2010 and 2012 may approach \$750 million, dwarfing the \$225 million that the Government pledged in Budget 2009 to subsidize rural broadband expansion over the same timeframe. In fact, while Industry Canada allocates that \$225 million subsidy over 36 months, it will collect during the same timeframe approximately \$390 million in spectrum licence fees absent any changes to the fee regime.

These fees and charges do not include the multiple billions that will be directed to Government's Consolidated Revenue Fund as a result of upcoming spectrum auctions. Every dollar of those fees, charges and auction proceeds is a dollar that is unavailable for network expansion and improvement, and ultimately, a dollar that must be absorbed by Canadian consumers.

Outdated Research and Development Conditions of Licence

Section 7(g) of the *Telecommunications Act* states that one of the Act's objectives is "to stimulate research and development in Canada in the field of telecommunications and to encourage innovation in the provision of telecommunications services." The Government's *Consultation Paper on a Digital Economy Strategy for Canada* asks whether "... our current invest-

ments in R&D effectively lead to innovation, and the creation of new businesses, products and services? Would changes to existing programs better expand our innovation capacity?"

CWTA notes that terrestrial commercial mobile spectrum licensees in Canada typically carry a condition of licence (COL) requiring them to dedicate 2% of adjusted annual revenues to a narrow range of pre-defined R&D activities. To the best of CWTA's knowledge, no other jurisdiction in the world imposes this type of condition on spectrum licensees.

One key change the Government should make to its R&D framework is the elimination of this COL for wireless licensees, consistent with its elimination for satellite licensees, and more broadly, consistent with the 2007 *Cabinet Directive on Streamlining Regulation*. It would be further reflective of a recent recommendation of the Senate Committee on Transportation and Communications.^{xxvii}

This COL may have made sense when the wireless industry was in its infancy, and there was little or no wireless R&D infrastructure in Canada – a situation far from reality today, with numerous wireless innovation clusters across the country. Today, wireless R&D investment is driven by high and growing levels of competitive intensity in the industry, rather than by regulatory requirement. In today's marketplace, wireless carriers facilitate innovation through "innovation clusters" or "innovation centres", through wireless application and device development in research labs, and through testing of new applications and services on the networks themselves, particularly their world-leading HSPA+ networks.

In today's wireless marketplace, productivity gains through R&D are the result of commer-

Recommendation 2: At the very least, avoid any increase to the already excessive spectrum licence fees (the most expensive in the G7) and other regulatory fees and charges paid by wireless carriers.

cializing innovation, more so than through the prescribed list of general R&D activities prescribed in the policy that underpins the R&D COL. By continuing to prescribe the range of R&D activities in which the industry should invest, the current COL diverts wireless carriers' R&D activity from where it can have the greatest overall contribution to productivity and innovation.

CWTA submits that this COL, which has long ago run its course, is an artefact of the original cellular licensing process, and should be eliminated in the interest of streamlining regulatory overhead for both industry and government. Elimination of that COL will not reduce wireless R&D spending in Canada, but will allow those research dollars to flow to where to where they are needed most – research and development into enhancing and improving the efficiency and performance of next generation networks in Canada.

Modernize Export Control Policies for Cryptography Products and Technology

Encryption is a critical element of the digital economy. It permits the safe and reliable transmission of data, protects the integrity of information and communication systems, and is indispensable when it comes to protecting consumers' privacy. While encryption technology was historically the closely-held domain of military and intelligence agencies, today the Internet Engineering Task Force has identified more than 370 internet standards that use some form of encryption technology, and the Israeli government maintains a list of 7,000 commodity-level products that make use of encryption software and hardware.^{xxviii} These include virtually every type of device that accesses a

wireless network, from handsets to tablets to wireless-enabled laptops.

Canada's 1998 Cryptography policy states that Canada will continue to implement cryptography export controls in keeping with the framework of the international *Wassenaar Arrangement*, that Canada will take into consideration the export controls of other countries and the availability of comparable products when rendering export permit decisions and that the export permit application process will be made more transparent and procedures will be streamlined to ensure the least regulatory intervention necessary. CWTA encourages the Canadian government to ensure it adheres to this stated policy and to review and update the current Canadian framework and licensing practices as necessary to meet this policy.

This is particularly urgent given the recent reforms announced by the US government to its export-control regime for cryptography products and technology.^{xxix} Controls on some exports of cryptography products will be relaxed, meaning that the wait time for shipments of some products "with encryption capabilities" (e.g., a cell phone or a network storage system) will be reduced from 30-60 days, to a 30-minute notice-and-ship regime. This significant relaxation of the former pre-shipment review framework is in addition to the US export controls system that already operates at a far faster pace than in Canada.

This means that American-based manufacturers of smartphones and other advanced wireless devices will now be able to ship parts, components, software and finished products to foreign subsidiaries and partners with virtually no pre-clearance restrictions, while Canadian-based manufacturers remain, in some cases,

Recommendation 3: Eliminate the outdated condition of licence requiring spectrum licensees to spend 2% of adjusted revenues on a pre-defined list of R&D activities.

unable to ship parts between Canada and overseas assembly plants without undergoing lengthy bureaucratic delays. This clearly places Canadian-based wireless equipment manufacturers at a significant disadvantage relative to their counterparts in the US and elsewhere.

CWTA urges the Government to coordinate the efforts of relevant departments and agencies to implement changes and streamline Canada's export-control practices for cryptographic products, to align better with Canada's stated policy in this regard.

Along these lines, there is room for considerable improvement in a number of areas to ensure that Canadian researchers, developers and exporters of cryptography products and technology are not at a competitive disadvantage.

- Ensuring that interpretations of international treaty obligations are not more stringent in Canada than in other countries;
- Ensuring that Canada's licensing practices and processes are streamlined to the greatest extent possible, so that requirements in Canada are not more onerous and processing times not longer than those elsewhere;
- Introducing general export permits for commercial cryptography products; and

- Ensuring expeditious implementation of any changes to the Wassenaar Export Control List so that Canadian companies can quickly take advantage of any new decontrols agreed upon at the international level.

These steps would go a long way towards reducing unnecessary bureaucratic delays and ensuring that Canadian-based wireless manufacturers and exporters are not subject to Government-imposed disadvantages relative to their competitors in other countries.

To summarize, excessive spectrum licence fees, mounting regulatory charges, and outdated carrier conditions of licence and manufacturer export-control regulations combine to siphon much needed revenues away from capital investment in next generation networks.

CWTA submits that the Government should clearly be seeking ways to streamline and reduce this mounting regulatory overhead to free up network investment funds as part of its national Digital Economy Strategy. Also, as part of this process, Government should also be looking for ways to incent the investment of new dollars into next generation networks.

Recommendation 4: Review Canada's cryptography policy to ensure its application reflects the current state of the marketplace for encryption-containing technologies, and does not hinder the efficient operation of multi-national wireless equipment manufacturers located in Canada.

Government Should be Looking for Ways to Strengthen and Create Incentives for Network Investment

There are a number of concrete measures the Government could take to incent and accelerate investment in Canada's digital infrastructure. A more modern spectrum policy framework, targeted fiscal policy measures, investments in training and commercialization, and wider use of advanced wireless technologies by key Government officials would go a long way towards improving the business case for capital investments in next generation networks.

A 21st-Century Spectrum Policy Framework

The *Consultation Paper on a Digital Economy Strategy for Canada* asks "what steps can be taken to ensure there is sufficient radio spectrum available to support advanced infrastructure development?"

CWTA submits that as a first step to addressing this question, the Government should update its spectrum policy framework to better maximize the net benefits of spectrum use to Canadian economy and society, by enabling the migration of spectrum to its highest valued economic use.

CWTA notes that the 2007 report *Study of Market-based and Exclusive Spectrum Rights*, prepared for Industry Canada by a number of leading experts in the field (the Cave Report),^{xxx} provides an international overview of the significant advances in the application of economic principles to spectrum policy. The report, which Industry Canada released in 2009, recommends a number of reforms to Canada's spectrum framework. Many of the recommendations and principles canvassed in the report identify steps the Government could take to enhance the business case for network investment in Canada.

Given that the Cave Report was delivered to Industry Canada over three years ago, CWTA

submits that the Government should initiate a full public consultation on the report's recommendations as soon as possible. In CWTA's view, these consultations are particularly important as other jurisdictions, including the US, UK, Australia and New Zealand are actively implementing these policies already.

CWTA also submits the Government should begin consultations on the following spectrum policy reforms as soon as possible, to improve the business case for network investment in Canada:

- *Encourage full spectrum trading in secondary markets:* The Cave Report provides a roadmap to implementing a system of spectrum trading and market-based exclusive spectrum rights that would apply to all commercial and public sector spectrum users. Moving away from the current centralized command-and-control model of spectrum allocation and redistribution would ensure that greater amounts of spectrum find their highest valued use, eliminating inefficiencies that leave much need spectrum unused and undervalued.
- *Provide for longer-term licences with higher expectations of renewal:* In the 2009 consultation paper,^{xxxi} Industry Canada sought comments regarding the renewal process of long-licences, including whether licences should continue to be issued for 10 years or longer. CWTA believes strongly that wireless spectrum licences should be issued with a high expectation of renewal, and that this principle should be explicitly stated in both spectrum policy documents and in the conditions placed on individual spectrum licences.

Moreover, CWTA notes that the current 10-year licence term is shorter than the

comparable terms in other countries. As Industry Canada noted, 15-year terms are the norm in Guatemala, France and Australia; New Zealand provides cellular spectrum licences for 20 year terms, as does the United Kingdom for 3G licences, along with unlimited terms for auctioned spectrum.

CWTA agrees with the statement in the *Consultation Paper on a Digital Economy Strategy for Canada* to the effect that longer-term licences provide a more stable investment climate for licensees, while recognizing the long-term investment required to build the physical infrastructure to support use of the spectrum being licensed, and the need to recover those costs over time.

Any future wireless spectrum licences awarded or renewed in Canada should carry longer licence terms and/or explicit statements pertaining to higher expectations of licence renewal. Such prescriptions would go a long way towards strengthening the business case for long-term network investment in Canada.

- *Permit greater predictability and longer-range planning on allocations and auctions:* CWTA notes that Industry Canada has made several references in recent months, and in past years, to releasing a schedule of spectrum allocations and auctions. CWTA commends this far-sighted and long-overdue initiative. Industry Canada first issued a Spectrum Release Plan in 1999 with the intention to update the document “on an annual basis”.^{xxxii} The intent of the Spectrum Release Plan was to provide a forecast of the types of spectrum to be released and the timing for initiating future competitive licensing. The Spectrum Release Plan was last updated in 2001.

Wireless network operators require the maximum possible lead-time to raise the billions in capital required to acquire spectrum at auction. Network operators’ capital expenditure decisions are typically made 24 to 36 months in advance. Yet network operators typically receive only a few months’ notice of the precise timeframe for spectrum allocations.

As Industry Canada has said itself:

An auction will be most successful when all pertinent information regarding the licences being auctioned is readily available at the beginning of the process. This should include information on spectrum the Department plans to release in the future, the timing of its release, and the assignment mechanism. This information will enable participants to more accurately assess the current and future marketplace when developing their business plans, and help them prepare a reasonable valuation for the spectrum in question. By reducing uncertainty, this information will give bidders greater confidence in determining an appropriate strategy.^{xxxiii}

CWTA strongly submits that Industry Canada should release an updated Spectrum Release Plan as soon as possible. A ten-year Industry Canada spectrum blueprint identifying which frequency bands will be released, when and how, would allow operators and capital markets a greater measure of certainty and predictability. This would in turn reduce perceived levels of investor risk that lead to higher capital and operating costs for network operators, and ultimately, higher costs for businesses and consumers.

The need for additional spectrum is not restricted to mobile services. As subscriber data consumption grows, so does the requirement for backhaul capacity connecting each cell site to the core network. As a general matter, adequate suitable spectrum for microwave backhaul capacity is required wherever mobile networks have been built. This spectrum is required in major urban centers and suburban areas, as well as rural and remote areas. The expansion of microwave backhaul systems is underway, and will continue to keep pace with consumer demand for data services, provided additional spectrum is made available on a predictable and expeditious basis.

- *Encourage maximum efficient use of licensed spectrum by all users, including public sector users:* As outlined above, exponential increases in data traffic on Canada's networks mean that more spectrum will need to be made available in the near future to support the exponential growth of bandwidth intensive mobile services. CWTA believes the challenge of impending capacity constraints must be addressed through smarter, more efficient engineering of hardware, software, applications and services; as well as through the application of comprehensive and focussed spectrum planning and allocations policies.

Efficient engineering can conserve network bandwidth and defer the capacity crunch if the cost of carrying data-rich applications is considered and incentives are created to make applications and services more efficient. The use of efficient, energy-conserving hardware and software technologies is also crucial.

Even with greater engineering efficiencies, the industry will remain dependent on the government making more spectrum available in order to satisfy the growing consumer demand for rich mobile products and services. However simply allocating more spectrum will only go part of the way towards addressing this challenge. Future band-planning exercises should encourage the maximum possible use of the spectrum in

question by all users – including public sector users. Interference management should strive for optimum precision, spectrum in popular bands must be utilized fully and, where necessary, the re-allocation process must allow for the expedited prior clearance of bands. Along these lines, CWTA notes the recent recommendation of the Senate Committee on Transport and Communication that "Industry Canada, in establishing policies to allocate and price spectrum, provide incentives for the efficient use of spectrum."^{xxxiv}

To summarize, there are a number of concrete steps the Government could take in the short-term that would improve, in the long-term, the business case for investment in next generation wireless networks.

These spectrum policy measures have been tried and tested in numerous comparable markets around the world. Industry Canada has received multiple reports and recommendations endorsing them in recent years, and has endorsed many of the recommendations itself, at least in principle, in various policy statements in recent years. The time is now to move expeditiously in launching and/or finalizing the processes necessary to formalize these recommendations. The success of the Government's Digital Economy strategy will hinge on increased and more flexible access to spectrum, and to substantial amounts of

Recommendation 5: Issue an updated Spectrum Release Plan, and implement consultations – as soon as possible – on the recommendations contained in the 2007 Cave Report to determine whether the following changes would advance the Government's Digital Economy Strategy:

- Full spectrum trading in secondary markets
- Longer licence terms with higher expectations of renewal
- Greater predictability and longer-term planning for future auctions and allocations
- Measures to encourage efficient use of spectrum by all users – including the public sector.

private sector capital to turn that spectrum into useable bandwidth. The wireless industry cannot afford additional delay when it comes to much-needed and over-due spectrum planning and policy decisions.

Accelerated Capital Cost Allowance (ACCA) for Broadband Network Equipment

Under the *Income Tax Regulations* there are several classes of depreciable assets that relate to telecom network equipment, including broadband networks, each with different capital cost allowance (CCA) rates:

- Class 8: radiocommunication equipment (CCA rate is 20%)
- Class 42: fibre optics (CCA rate is 12%)
- Class 46: data network infrastructure equipment and systems software (CCA rate is 30%)

CWTA recommends that Budget 2011 include a temporary (24-36 month) Accelerated Capital Cost Allowance for these classes of assets: from current rates to 50% for capital investments in most areas, and 100% in those areas identified by Industry Canada as “underserved” during its broadband availability survey conducted as part of the \$225 million Broadband Canada initiative. Moreover, the current “half-year” rule should be suspended during the period of accelerated depreciation for these classes, to affect maximum benefit of the measure during the proposed incentive period.^{xxxv}

As noted above, much of the success of the Government’s Digital Economy Strategy will depend on extending and improving Canada’s broadband networks to handle increased use of

bandwidth-intensive devices and services. This temporary fiscal measure would prioritize limited capital budget spending to broadband spending in underserved areas and would draw forward several years’ worth of planned capital upgrades into a shorter, more strategic timeframe. This measure would be revenue-neutral to government over the long term, as these assets eventually fully depreciate anyhow.

Mobility and advanced wireless services are an undeniable driver for business innovation. International studies have demonstrated that small companies that embrace wireless technology have higher product turnover, higher profits and higher staffing levels.^{xxxvi}

By scaling the ACCA in favour of rural and remote areas, the Government would be creating an incentive for more rapid, and incremental, investment in the areas whose residents and small businesses stand to benefit most from access to advanced wireless services. These investments would enable small business operators in rural and remote parts of Canada to more rapidly adopt the next generation of productivity-enhancing networked services and applications, such as the expected surge in ‘cloud computing’ and other time and money-saving advances.

Wireless Centre of Excellence

The Government’s *Consultation Paper on a Digital Economy Strategy for Canada* puts emphasis on both skills development and digital content creation. CWTA notes that these two objectives can be self-reinforcing, and can be achieved largely by way of market forces, as opposed to complex redistribution schemes (such as the content production community’s proposed tax on wireless consumers to subsidize online content production).

Recommendation 6: Introduce in Budget 2011 a temporary accelerated capital cost allowance for broadband-network related assets, increasing the current CCA rates of depreciation to 50% for most areas, and to 100% for the hardest and most expensive to serve areas of the country (as identified by Industry Canada).

Specifically, CWTA recommends that the Government leverage its Network of Centres of Excellence (NCE) program, creating a 'Wireless Centre of Excellence' (such as it has for other strategic sectors of the economy).

A Wireless Centre of Excellence will be a critical element of any national digital economy strategy. It will bring together private-sector application and content creators, investors and buyers, platform designers, training institutions and network operators. It will lead to an updraft of new opportunity for young professionals and the commercialization of Canadian expertise abroad. Ultimately it will create new companies, increase employment, build revenues and stimulate economic growth in the Canadian wireless sector by harnessing innovation from Canadian small and medium enterprises (SMEs) and academia.

In January 2010, CWTA lent its support to an application for support for a Wireless Centre of Excellence, submitted to the NCE Secretariat by the Wavefront Wireless Commercialization Centre, based in Vancouver. CWTA reiterates that the Government should support this application under its NCE program, as a critical element of any National Digital Economy Strategy.

Facilitating Wireless Antenna Siting

Wireless networks rely on base station antennas, associated equipment and supporting structures to operate. Without them, none of the services that Canadian individuals and businesses have come to depend on would exist. A number of factors contribute to the continued need for additional antenna sites: new wireless networks are being deployed; existing wireless networks are being expanded; and capacity requirements for voice and data traffic are growing significantly.

Wireless carriers do all they can to unobtrusively integrate their facilities into communities and to follow all requirements and conditions regarding the antenna siting process. In CWTA's view, Government should actively assure the public that the standards and policies in place already address the concerns of citizens, including taking a more prominent role in explaining to the public the safeguards inherent in Health Canada's *Safety Code 6*, and how the industry complies with these standards.

Better Use of Wireless Technology by Government

Although the Government of Canada makes widespread use of basic wireless communications services, it makes virtually no use of advanced wireless applications or services, such as the type of advanced applications associated with the current generation of 3G/HSPA+ smartphones.

To the best of CWTA's knowledge, virtually all Government employees are prevented from using their Government-issued wireless devices to access social networking, streamed video, or any of the other thousands of applications commonly used by plugged-in Canadians.

While it is not uncommon for employers to restrict employees' access to non work-related online applications and services, CWTA notes that this restriction applies even to those officials directly involved in monitoring and regulating the wireless sector. In some cases, officials' devices have even had picture-taking functions disabled. This is akin to preventing financial regulators from using the full range of commercial banking services available to the public – it obviously impairs their ability to achieve their mandate and to support the Government's broader policy objectives.

Recommendation 7: Support the creation of a Wireless Centre of Excellence through the Network Centres of Excellence program.

Recommendation 8: Take steps to assure the public that the standards and policies in place adequately address the concerns of citizens, including taking a more prominent role in explaining the safeguards inherent in Health Canada's *Safety Code 6*.

CWTA submits that relevant officials at Industry Canada, the CRTC, Canadian Heritage, the Copyright Board, the Competition Bureau, and the Office of the Privacy Commissioner (who are all involved in monitoring and regulating the wireless sector in one respect or another) should have a clear and up-to-date understanding of developments in the wireless marketplace they oversee.

Accordingly, CWTA recommends that the Government undertake an assessment of the needs of those officials whose mandates would be better achieved by allowing them to access the advanced wireless services that have already become an important feature of the Canadian digital marketplace, and that will only become more central to the economic life of the country as the Government's Digital Economy Strategy takes hold.

The Government should also be encouraging departments and agencies to make full use of available wireless technologies in the services they deliver to Canadians. In this respect, CWTA agrees with the statement in the *Consultation Paper on a Digital Economy Strategy for Canada* that "Governments can play an important role in acting as model users of ICT and leading by example." Governments should make much more use of available wireless networks, devices, and applications to connect with the more than 23 million Canadians already using them on a daily basis.

Adoption of Standards-Based, Commercially Available Technologies for Public Safety Networks

Canadian public safety agencies continue to make individual decisions with respect to their communications networks. This results in a

patchwork of different technology standards and platforms for their wireless communications operations. This in turn reduces the level of technical interoperability between agencies and hampers their ability to work together.

Industry Canada has established a set of policy principles intended to facilitate a more coordinated approach to achieve spectrum efficiency, promote radio interoperability and ensure the orderly development of radio facilities for public safety. CWTA submits that the government should go further and encourage the use of both standards-based equipment and commercial networks in public safety communications systems.

In the US, the 15 public safety organizations of the National Public Safety Telecommunications Council (NPSTC) voted unanimously in June 2009 to endorse LTE as the favoured technology standard most suited to the development of a nationwide interoperable wireless network for public safety officials and agencies, as has the Board of Officers of the Association of Public Safety Officials and the Executive Committee of the National Emergency Number Association.

Economies of scale and scope mean that deploying a common standard for public safety communications will enable more cost-effective deployment of interoperable communications platforms. The use standards-based equipment ensures that a variety of equipment is available at reasonable cost on a timely basis. It also reduces time and effort required for network deployment. Similar benefits can be realized through the use of commercial networks.

The use of common spectrum and air interfaces throughout commercial networks ensures that these systems can effectively deal with any

Recommendation 9: Permit those officials with a mandate to monitor and regulate the wireless sector to access the full range of wireless applications and services available to Canadians.

Recommendation 10: Encourage departments and agencies to make full use of available wireless technologies in the services they deliver to Canadians.

Public Safety requirement or event and that subscriber equipment that may need to be deployed in a given area is immediately capable of operating on the assigned channels with no need for any programming or other network modifications.

Presently the cost of spectrum for public sector users, such as Public Safety Agencies, is not generally taken into account when making procurement decisions. The Cave Report addresses the issue of managing public sector use of

spectrum and describes an incremental approach to improving efficiency in spectrum use by the public sector, including calculating the opportunity cost of its use of the spectrum, and incorporation of spectrum valuations in investment decisions so that those engaged in procurement are able to examine the scope for substitution between spectrum and other costs. As previously noted, CWTA believes Industry Canada should initiate consultations on implementing the Cave Report's recommendations as soon as possible.

Recommendation 11: Encourage the adoption of international standards-based, commercially-available technology for use by public safety officials and agencies.

Recommendation 12: Encourage public safety agencies to include a calculation of the opportunity cost of use of the spectrum, and to incorporate spectrum valuations in investment decisions.

Conclusion

The wireless industry in Canada makes an undeniable contribution to the economic and social life of Canada. On the strength of 25 years of investment in wireless networks – including \$9.3 billion in capital investment in 2008-2009 – Canada now boasts some of the most advanced and fastest wireless networks in the world, covering 99% of the population with wireless service, and 93% of the population with 3G service.

Within the timeframe contemplated in the Government's Digital Economy Strategy, Canada's wireless industry will be under constant pressure to step up the already heavy pace of network investment to accommodate the *doubling* of bandwidth-intensive data traffic every year between 2010 and 2014.

At the same time, excessive and arbitrary fees, levies and other regulatory charges will only serve to redirect funding that could otherwise be spent on further network investment. Canadian consumers already absorb the highest spectrum licence fees in the G7 – fees that are significantly higher than in the US. These fees are on top of the hundreds of millions of dollars that wireless carriers expect to pay in other regulatory fees and charges between 2010 and 2012, and on top of the billions they will need to raise to participate in upcoming spectrum auctions over the next 12 to 24 months.

In light of these factors, CWTA recommends that the Government take the following steps as critical elements of its Digital Economy Strategy:

1. Immediately commence the licensing process for the 700 MHz and 2500 MHz spectrum bands; and take all necessary steps to identify 500MHz of additional spectrum that should be made available for commercial wireless services;
2. At the very least, avoid any increase to the already-excessive spectrum licence fees (the most expensive in the G7) and other regulatory fees and charges paid by wireless carriers;
3. Eliminate the outdated condition of licence requiring spectrum licensees to spend 2% of adjusted revenues on a pre-defined list of R&D activities;
4. Review Canada's cryptography policy to ensure its application reflects the current state of the marketplace for encryption-containing technologies, and does not hinder the efficient operation of multi-national wireless equipment manufacturers located in Canada;
5. Issue an updated Spectrum Release Plan, and implement consultations on the recommendations contained in the 2007 Cave Report to determine whether the following changes would advance the Government's Digital Economy Strategy:
 - a. Full spectrum trading in secondary markets;
 - b. Longer licence terms with higher expectations of renewal;
 - c. Greater predictability and longer-term planning for future auctions and allocations; and
 - d. Measures to encourage efficient use of spectrum by all users – including the public sector.
6. Introduce in Budget 2011 a temporary accelerated capital cost allowance for broadband-network related assets, increasing the current CCA rates of depreciation to 50% for most areas, and to 100% for the hardest and most expensive to serve areas of the country (as identified by Industry Canada);

7. Support the creation of a Wireless Centre of Excellence through the Network Centres of Excellence program;
8. Take steps to assure the public that the standards and policies in place adequately address the concerns of citizens, including taking a more prominent role in explaining the safeguards inherent in Health Canada's Safety Code 6;
9. Permit those officials with a mandate to monitor and regulate the wireless sector to access the full range of wireless applications and services available to Canadians;
10. Encourage departments and agencies to make full use of available wireless technologies in the services they deliver to Canadians;
11. Encourage the adoption of international standards-based, commercially-available technology for use by public safety officials and agencies; and
12. Encourage public safety agencies to include a calculation of the opportunity cost of use of the spectrum, and to incorporate spectrum valuations in investment decisions.

Appendix A: Comparison of Spectrum Fees among developed countries

(note: data unavailable for some G20 countries)

Country	Date Revised	\$/MHz/pop	\$/Sub		
Australia 900 MHz	n/a	0.0528	n/a		G20
Belgium (Average)	2010	0.0315	0.0270		G20
Canada	2003	0.0351	6.6873	G7	G20
Denmark 900 MHz	2010	0.0044	0.2301		
Denmark 1800 MHz	2010	0.0022	0.2656		
Finland 900 MHz	2004	0.0084	0.0555		G20
France 900 MHz	2009	0.0132	4.3513	G7	G20
France 1800 MHz	2009	0.0070	2.3264		
France Pre 2009	no longer in force	0.0229	7.5666		
Germany (Average)	n/a	0.0002	0.0288	G7	G20
Ireland (Average)	2000	0.0210	0.0000		
Italy	n/a	0.0195	2.4438	G7	G20
Japan	2005	0.0163	3.0541	G7	G20
Korea – KT Corp	2005	0.0272	3.5305		G20
Korea – LGT	2005	0.0310	3.4819		
Korea – SKT	2005	0.0636	5.7418		
New Zealand	2007	0.0158	0.7595		
Spain (Average)	n/a	0.0245	0.0206		
Sweden	2010	0.0017	0.2828		
UK 900 MHz	2005	0.0089	0.4869	G7	G20
UK 1800 MHz	2006	0.0069	0.7682		
USA – CMRS	2009	0.0006	0.1943	G7	G20

Endnotes

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