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March 1, 2000

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Industry Canada  
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Dear Sirs:

3664341 Canada Inc. is pleased to provide comments on Canada Gazette Notice No. DGRB-018-99: Consultation on the Proposed Policy and Licensing procedures for the Auction of Additional PCS Spectrum in the 2 GHz Frequency Range.

Should you wish to discuss these comments further, please do not hesitate to contact the undersigned.

Sincerely,  
**ON BEHALF OF 3664341 CANADA INC.**

Original signed by

Mark H. Goldberg  
President,  
Mark H. Goldberg & Associates Inc.

## 1. Introduction

3664341 Canada Inc. ("the Company") is pleased to provide these comments regarding Canada Gazette Notice No. DGRB-018-99: Consultation on the Proposed Policy and Licensing procedures for the Auction of Additional PCS Spectrum in the 2 GHz Frequency Range ("the Gazette Notice").

The Company is very excited about the prospect of additional spectrum being made available for the provision of next generation wireless services. Structured correctly, the upcoming auction represents an excellent opportunity to put Canada at the forefront of advanced wireless data services, permitting global leadership in both content and service development as well as third generation wireless technology.

Industry Canada showed tremendous foresight when licensing second generation PCS systems, by holding 40 MHz of the available spectrum in reserve. Now, five years later, the potential of mobile communications and wireless networks has greatly surpassed what was envisioned even then. While a half decade ago the promise of new and innovative services was trumpeted by incumbent and new entrant alike, the fact remains that the advent of second generation digital technologies did not translate into the panacea that was greatly anticipated. True, the enhanced capacity of the new technologies wielded great benefits to the operators, but aside from small incremental service enhancements such as call display and short message service, most consumers still consider PCS to be strictly a cellular-like voice telephone service.

Not so with third generation, or 3G, which has captured the attention of more than just those within the telecommunications industry. 3G is, in essence, the convergence of the two biggest phenomena of the last 20 years: Mobile Communications and the Internet. The advent of third generation technologies has the potential to revolutionize both industries, resulting in new and more powerful modes of communications, information gathering and mobile electronic commerce.

In this submission, we posit, with supporting evidence from leading experts in wireless communications, that new entrants represent Canada's best chance of ensuring 3G technologies and services are deployed quickly and successfully.

New entrants can move directly to 3G technologies without the restrictions that legacy networks place on incumbents. These constraints will force existing players to begin with transitional (2.5G) overlay technologies that will prove expensive to deploy and difficult to administer. New players are also in a better position to develop and facilitate new modes of doing business and creating value, considering that they have no requirement to satisfy significant numbers of existing subscribers that continue to use old technologies.

**Outsiders are not constrained by the vested economic and technology interests of those within the industry. Nor are they constrained by the present viewpoints of the industry. As such, outsiders can develop a vision of the future that extends beyond the comprehension of those presently in the wireless world.**

**This is the advantage of new industry entrants; they will be the innovators of 3G applications. Some of these companies ...have the scope of imagination, the delivery mechanism and the money to make 3G happen.<sup>1</sup>**

Thus, new entrants alone have the capability, agility and resolve to quickly deploy the most advanced technologies and services, which will enable Canada to become a leader in 3G know-how and experience that can be exported the world over.

However, time to market is a critical element in the success of future entrants. Obtaining spectrum at this time, when technology development is in its early stages, is crucial for new entrants who wish to attract the necessary capital in order to introduce leading edge services ahead of incumbents. Other jurisdictions around the world have recognized this and are actively promoting competitive entry into the 3G market.

Industry Canada has the opportunity to establish policies now that will ensure that the potential of the available spectrum is fully and quickly realized. Allowing market forces alone to determine the recipients of the spectrum licenses would almost guarantee that the incumbents become the sole beneficiaries of these licenses. Such an outcome would delay by years the arrival of third generation networks and services to Canada. Using the Department's powers to enable and encourage new entry, while setting appropriate

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<sup>1</sup> "Third Generation Wireless (3G): Why, When, and How It Will Happen," Herschel Shosteck Associates, November 1999 (The Shosteck Report)

guidelines on the usage of the spectrum, is the best way to forestall this unwanted and unfortunate result.

In light of the above, we recommend that the Department establish the following policies with respect to the upcoming auction:

- The 40 MHz comprising the C- and E-blocks should be sub-divided into at least two blocks of 20 MHz each. The Department may then wish to subdivide each of the 20 MHz blocks into smaller blocks of 10 MHz.
- One 20 MHz block should be set aside for new entrants, to be licensed on a national basis.
- The Department should establish guidelines for the set-aside block (or blocks) that promote national coverage, open networks and deployment of technologies that integrate voice and data on an end-to-end packet switched network.
- Incumbents should be directed to negotiate roaming arrangements with the new entrant to alleviate some of the disadvantage inherent in being last to market.
- The remaining blocks should be open to all bidders, who are in good standing with respect to current license conditions, and licensed on either a national or regional basis.

We believe these policies will ensure that Canada is a leader, and not a follower, in the coming revolution.

## 2. Competitive Entry as a Means to Speed 3G to Market

The market for wireless voice telephone service in Canada is competitive and healthy. Four strong companies provide good quality voice services at affordable rates, are activating new users at a fast rate and will probably continue to do so for years to come. These players are experts at marketing and selling wireless telephone services and know the business well.

However, a new generation of wireless services and technologies is looming that is expected to give rise to novel ways of doing business and creating value for subscribers and shareholders alike. The inherent “go anywhere” capabilities of wireless networks, the advent of data access rates approaching megabit proportions, the development of location technologies and the exploding phenomenon of e-commerce are converging to enable services and applications that have yet to be conceived. In order to succeed in the emerging world of wireless e-commerce, companies will need to think “out of the box” – beyond mundane applications such as mobile banking, toward future services that have no pre-existing equivalent.

Well-financed entrants with a fresh outlook and unfettered vision are better suited than are incumbents to quickly capitalize on these converging streams and harness their tremendous potential.

### 2.1 Incumbents’ Evolution vs. New Entrants’ Revolution

Incumbents see the transition to 3G as an evolution rather than a revolution, planning first to deploy interim 2.5G technologies.

Billions of dollars<sup>2</sup> have been spent by existing operators to build first and second generation systems that are optimized to provide voice service. These operators understandably need to protect their substantial investments and all have charted a course to evolve these networks over time and in phases to full third generation

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<sup>2</sup> Wireless Telecom, QII 1999, Interview with Michael Binder: “We estimate that since 1987, cellular licensees have made capital outlays of approximately \$8.8 billion to build their wireless infrastructure.”

capabilities, while continuing to serve their imbedded customer bases over their existing infrastructure. This evolution will be accomplished through the deployment of overlay networks using 2.5G technologies such as Enhanced Data Rate for Global Evolution (Edge) and General Packet Radio Service (GPRS). At some undefined time in the future (not before 2006)<sup>3</sup> these networks are expected to further evolve to eventually provide data rates consistent with 3G expectations.

Although this strategy seems reasonable, in fact these 2.5G technologies are simply not up to the challenge. Effectively, without substantial changes to the software and hardware of base stations, base station controllers and home location registers, neither GPRS nor EDGE can deliver data rates greater than 28.8 kbps or, possibly, 43.2 kbps.<sup>4</sup> Compare this with speeds of up to 472 kbps under full mobility conditions that is expected to be possible with the first deployment of 3G technologies. Other challenges may stem from RF interference, high bit error rates and/or inadequate interoperability between base stations and terminals. If high bandwidth, non-voice applications become common, as is expected, 2.5G may be unable to handle the highly variable information rate inherent in the real time transmission of multi-media and full motion video. Operators may discover that their investments in 2.5G will not deliver the 3G-like capabilities that are essential to meet the end-user demand that is expected to materialize.

**The shortcomings of these interim “evolutionary solutions” stem from the inherent limitations of GSM, TDMA/IS-136, and CDMA/IS-95 architecture. Neither the networks or their air interfaces can support the rapid and extreme rate of change in the flow of bits, which is inherent to complex wideband content. For GPRS and EDGE to do so would require a substantial upgrade of GSM and TDMA/IS-136 infrastructure...Thus contrary to popular opinion, the transition to 3G must be revolutionary not evolutionary.<sup>5</sup> [Emphasis in original]**

The inherent deficiency of the incumbent's technology choice, while troubling, is only part of the story. Considering their vested economic and technology interests, incumbents simply do not have the incentive to move to 3G faster than their evolutionary paths permit. Although existing operators will insist that they are making strides towards

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<sup>3</sup> Shosteck Report, Executive Summary, Page (i), as amended

<sup>4</sup> Ibid. page 207. The problems stem from the need to overlay a packet network on top of a circuit switched network as well as in attempting to group RF channels together to gain greater bandwidth. There are only so many channels that can be grouped together before expensive upgrades are required.

<sup>5</sup> Ibid., page 207

high speed wireless data services, these strides are by definition constrained by the slow, phased approach that they need to take to protect their legacy networks and to continue to service their existing customers.

While incumbent operators need to slowly evolve to 3G, Canada need not progress according to their time clock. New entrants, not limited by investments in mature technologies and infrastructures nor by staid business models and practices, have the ability to leapfrog directly to 3G within the spectrum band being auctioned this fall. Companies exist that have the scope, the financial resources and the vision to make 3G a reality. All that they require is the appropriate spectrum to implement that vision.

**Most [incumbents] will build 3G networks more slowly, focusing only on dense urban areas where demand for unique 3G services is likely. The single exception may be newly entering operators. With deep pockets and revolutionary business plans, they may construct 3G networks more rapidly than the established operators imagine.<sup>6</sup>**

In fact, new entrants are expected to accomplish in Europe<sup>7</sup>, where many countries are encouraging competitive entry, precisely what we posit one would achieve here in Canada:

**But the candidates most likely to cause a shake-up in the wireless sector and the pace of 3G are One.Tel and SpectrumCo (which brings together Virgin, Sonera, Nextel, Tesco and EMI), and they would both take a radical approach to network and commercial rollout, basing the business on a wireless Internet and m-commerce strategy. This would likely force the cellular operators to inject more urgency into their mobile Internet strategies. It could mean the difference between the perception of 3G as little more than new spectrum for the expansion of existing 2G businesses or, on the other hand, a new wireless Internet platform which will facilitate the emergence of dynamic new markets and opportunities.<sup>8</sup> [Emphasis added]**

Inasmuch as innovation in the wireless market is expected to emerge from new players as opposed to established operators, policies that encourage competitive entry would be

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<sup>6</sup> Ibid. Executive Summary, pg. ii

<sup>7</sup> See Section 4 for a complete analysis of 3G licensing in Europe

<sup>8</sup> Global Mobile, January 19, 2000, page 12

in line with the Government's view as expressed in the budget speech delivered by the Honourable Paul Martin, Minister of Finance on February 28, 2000:<sup>9</sup>

**In such a world, successful nations will only be those that foster a culture of innovation. They will be those that create new knowledge and bring the product of that knowledge quickly to market. Our goal as a nation must be to lead the way.**

**Our goal must be to inspire a spirit of entrepreneurship, one that asks our people to reach higher and look further, one that encourages us to see the world as our market, but Canada as the place to live.**

## **2.2 3G Service Definition and Requirements**

The future of wireless communications services has yet to be defined. The types of services that will be provided over high-speed wireless networks have yet to be conceived. These services will be defined by the current twenty-somethings, who can barely remember a time without mobile phones and the Internet. Applications will be developed that will suit the needs of this segment, with a large spillover effect into more mature market segments, as the value of these newly conceived services become recognized. Industry outsiders, who enter the market with fresh technologies and ideas, are favourably positioned to tap this vast potential.

**To comprehend those capabilities, we must attempt to understand an unknowable future... This future will be defined by two factors. First will be the "Internet Cohort". These are the first persons who have been raised, and are being raised, in both the Internet and wireless worlds. Their experiences and expectations – which will differ from those of all but a handful of older persons – will define 3G applications. Second will be the visions of the new industry entrants... In addition to greater vision, such new entrants will bring a clean technology slate. Given a separate 3G band, issues of deployment will be simpler. Even more germane, administrative, customer support, and billing systems will be state-of-the-art. The latter, in particular, will be designed for packet billing. They will include differentiation by bandwidth, latency, quality of service and security of transmission.<sup>10</sup>**

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<sup>9</sup> Budget Speech, section entitled "The New Economy"

<sup>10</sup> Shosteck Report, Executive Summary, pg. iv

This latter point cannot be overlooked. Next generation services will require next generation business systems that accommodate billing based on packets and service quality. Today, billing is minute-based and does not take into account quality of service. In the packet network of tomorrow, differentiation by latency (i.e. real-time vs. non real-time) and bandwidth is possible and desirable. Today's systems cannot accommodate tomorrow's requirements, another factor that will slow the progress of established carriers to providing 3G services and applications.

In the near term, applications developed for wireless data networks may not necessarily require the kind of bandwidth that 3G promises. However, the 3G revolution is expected to herald new applications, as discussed above, upon which the success of 3G network operators and service providers will depend.

For example, many believe that the next electronic commerce breakthrough will happen over wireless networks.<sup>11</sup> The inherent "anywhere, anytime" character of wireless networks, the advancement in bandwidth and data speeds, and emerging location technologies will combine to provide a platform for enterprises to interact with consumers as never before.

Inasmuch as wireless e-commerce will play a large role in next generation services and applications, in encouraging new competitive entry, the Department would thereby support its own Electronic Commerce Strategy:

**Canada's Electronic Commerce Strategy is implementing a leading-edge domestic policy and legislative framework...promoting electronic commerce internationally, and stimulating the development and use of electronic commerce by consumers and businesses to make Canada a global location of choice for electronic commerce by the year 2000.<sup>12</sup>**

Again, new entrants will have the advantage vs. incumbents in defining and developing the new platforms discussed above because their fresh outlook affords them clearer vision of the future.

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<sup>11</sup> Tod Maffin, MobileCommerce.org, July 1999

<sup>12</sup> Pg. 10, Industry Canada: Making a Difference, Our Priorities for 1999-2000, 1999

Incumbents, on the other hand, will be kept busy revamping their networks and business systems to conform with the new service and business model, an effort they will undertake only when forced to and/or when absolutely necessary. In addition, all of this effort must be undertaken while retaining the value of their legacy networks and supporting share value.

**New industry entrants have the advantage of having a different experience of the present, and due to that, holding a different perspective of the future. As outsiders to the wireless industry, they will be the innovators of 3G applications. Their innovation will come from two sources. First will be the distraction of established operators as they cope with the mechanics of the 3G transition. This will constrain their visions of future applications. Second will be the business models of the new entrants. These will expand their visions of future applications.**

**...Many established operators will react to 3G because they feel compelled to, not because they see a meaningful business case. On the one hand, some will feel compelled to bid for 3G spectrum because it may never again be assigned. On the other hand, some will feel compelled to establish competitive parity with other operators who claim a market for 3G applications and act accordingly. At best such “reactive” operators will move half-heartedly. They will have little conception of a 3G future. They will view their 3G expenditures as necessary defensive measures and try to minimize them.**

**In addition, as established operators begin the 3G transition, they will become immersed in its mechanics. These will revolve around issues of interoperability between different infrastructure and different terminals...All of these challenges must be met while maintaining the value of legacy infrastructure still to be depreciated. Likewise, they must be met while maintaining cash flows from current customers as tariffs continue to fall. They must be met while supporting share value. Under such circumstances, few established operators will be able to think beyond their present – voice-centric – business perspectives. This opens the future of 3G to newly entering operators.<sup>13</sup> [Emphasis added]**

Canada therefore has the opportunity to move the 3G yardsticks forward by years through enabling new entrants to begin immediately to implement their unique visions of the wireless future. In this way, Canada will enable itself to participate more meaningfully in the wireless revolution that is unfolding at a fast pace elsewhere in the world, and to distinguish itself among other Western Hemisphere countries, where the pace of wireless data innovation is perceived to be lagging other parts of the world:

**Here's one of the biggest ironies of the mobile Internet revolution: The U.S., which has an undisputed lead in technology and applications development for the dial-up, PC-based Internet, is lagging behind Europe in the emergence of the wireless Internet.<sup>14</sup>**

**Many of these applications and services are already available in Asia, where wireless technologies are far more advanced ... North America has been far too focused on the dot-com phenomenon, and is behind many other parts of the world when it comes to wireless.<sup>15</sup>**

New entrants can change this perception and bring Canada into the forefront of wireless data service innovation and development.

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<sup>13</sup> Ibid., pp. 113-115

<sup>14</sup> 3G Mobile, January 26, 2000, "Wireless Internet and the North American Experience"

<sup>15</sup> The Globe & Mail, February 29, 2000

### 3. Competitive Entry and Its Affect on the Market

As discussed at length above, new entrants can be expected to advance the advent of third generation technology deployment and service development in Canada through their fresh perspective and unique vision. In addition, licensing a new player will by definition stimulate investment and job creation in Canada. Using the established operators as cases in point, a new entrant can be expected to generate at least 2,500 direct jobs and thousands of indirect employment opportunities in the manufacturing, technology development and retail sectors.<sup>16,17</sup> New investment in network infrastructure and other required capital is expected to eclipse \$2 billion over 10 years. In addition, all of this technology deployment and application development activity as well as the investment in state-of-the-art networks will lead to significant export opportunities for Canadian companies.

The evolution of 2G services in Canada has shown that competitive entry also brings with it additional benefits in terms of stimulating industry activity and speeding service enhancements to market. Although, as mentioned above, 2G provided only a modest increment in terms of enhanced functionality, this did not stop the carriers, established and new, from racing to be the company that could boast to be the first in Canada to provide PCS services. This illustrates that new entry can also ignite the incumbents' fire and stimulate innovation on the part of all industry participants.

If this was the case for 2G services, how much more so can be expected for 3G where the improvement in capabilities and services can be described as a quantum leap. These enhancements, coupled with the right applications and services which new entrants are best positioned to bring about, are expected to increase subscriber numbers as well as average subscriber revenues. This last point will not be lost on the

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<sup>16</sup> www.bellmobility.com: "In 1996, Bell Mobility employed approximately 2,800 people. We expect that our workforce will increase to 5000 by the year 2000 and that the indirect employment created by our investments and growth in the wireless sector will reach 50,000 jobs over the next decade."

<sup>17</sup> www.cleartnet.com: "Cleartnet's team roster now numbers more than 2,400 people at Cleartnet offices, switch centres and retail locations from sea to sea."

incumbents, which have been waging a losing battle against declining average revenue per user (ARPU) since Cantel launched its Amigo service in 1994.

The expectation that the advent of advanced data services will lead to higher ARPUs is supported by a recently published TD Securities Inc. report on the European telecommunications sector.<sup>18</sup> Although the findings of the report are specific to Europe, they can be applied to North America as well.

In a section entitled “The Future of Mobile Media”, the report provides its assessment of what the advent of advanced wireless data services will mean to the industry, based on the predictions of the industry participants themselves. Here are some of its key findings:

- **Some operators believe that data may account for as much as half of traffic revenues within five years, which would have a dramatic impact on ARPUs and margins. The relevance of data is changing the way we view prospects for mobile operators, particularly in light of the persistent and almost universal declines in ARPUs we have seen in recent years, which were only accelerated with the introduction of the pre-paid tariff packages. The relationship that has existed for so long between mobile penetration and ARPUs (i.e. price sensitivity) has already begun to shift in the most advanced markets.**
- **Recent quarterly releases by Sonera Group the largest mobile operator in the most highly penetrated market in the world (Finland), show that the company has recently experienced year-over-year growth in its ARPUs, by 10% or more. Furthermore, evidence from NTT DoCoMo of Japan indicates that the introduction of data services not only creates a new revenue stream from the data traffic, but also stimulates voice traffic and revenues by as much as 10%-15%.**
- **The mobile data market in Europe is currently estimated to be worth as much as EUR2 billion, but it is growing at triple digit rates and may be worth as much as ten times this value in five years’ time. As with everything else in the history of forecasting growth in the mobile telecommunications industry, this may well be an understatement of mobile data’s ultimate potential.<sup>19</sup>**

The report also quotes estimates by Vodafone and Mannesmann regarding increases in ARPUs that will likely be stimulated by mobile data. The former conservatively predicts that data will result in at least a 20%-25% increase in ARPUs between now and

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<sup>18</sup>“European Telecommunications Sector Overview”, TD Securities Inc., February 10, 2000

<sup>19</sup> Ibid., page 19

the end of 2004, while the latter has indicated that mobile data could possibly impact its ARPUs by as much as 50% over the same period.<sup>20</sup>

It is important to note that Vodaphone and Mannesmann have made these predictions in an atmosphere of intense competition to deploy 3G services. In the UK, five 3G licenses will be auctioned off starting on March 6, 2000, with one of them set aside for a new entrant. All players are jockeying for position in the emerging 3G landscape and all want to be first.

Commentary in a leading industry periodical regarding the advent of 3G in the UK and elsewhere in Europe is in clear agreement with the sentiment that new entrants will stimulate all operators to speed 3G development:

**The truth is that without a new entrant, many incumbents would develop their 3G services at a very slow pace since the technology is expensive relative to the service gain over 2.5G. However, in many countries, new entrants will be well funded, and the regulatory environment will create a relatively level playing field. In these countries, incumbents will have to adjust their plans. In the UK, for example, incumbents may well find the pace of development faster than they would choose. The UK government has approved five licenses, with the new entrant receiving one of the best licenses. There are several well-funded groups very keen to enter the UK market despite the recent arrival of Deutsche Telekom (One2One) and Mannesmann (Orange). The regulator has created a reasonably level playing field, and national roaming will be in place despite recent legal battles. ...**

**Commercial success will require not just attracting new mobile customers, but also poaching significant numbers of customers from competitors. Therefore, the new entrant is likely to develop differentiated 3G services aggressively at the same time that it competes on the price of voice. If the incumbents are to defend against the threat they will also need to develop 3G rapidly.**

**In summary, tomorrow's new 3G operators may well end up determining the approach that today's operators take to 3G.**<sup>21</sup>  
[Emphasis added]

There is no reason why the situation in the UK and elsewhere in Europe cannot be duplicated here in Canada with the reservation of a block of spectrum for a new entrant. It is clear, however, that without the stimulation that new competitive entry is expected to

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<sup>20</sup> Ibid., page 20

<sup>21</sup> 3G Mobile November 3, 1999

bring, the results expected in Europe by 2004 will take much longer to be realized in Canada.

Thus it is the singular focus and vision of the new entrant that can bring third generation services to Canada sooner than otherwise expected, spurring all industry participants to advance their 3G deployment, which will bring about greater choice for consumers and better profitability for all players. In addition, the fact that ARPUs are expected to increase so significantly should provide ample room for additional competition in the Canadian market.

## 4. International Licensing Overview

Telecom regulators in Europe and Japan are gearing up to license dozens of companies with spectrum to provide third generation wireless services over the next 12 to 18 months. The first auction will take place in March 2000 in the UK while Spain is expected to announce the winners of its comparative process before March 15, 2000. Many jurisdictions are setting aside spectrum for new entrants. In fact, of the 14 European states that have announced 3G licensing plans, as many as 10 are guaranteeing at least one new entrant. In total, 50 to 70 licenses will be awarded in Europe this year.<sup>22</sup>

Some of the countries planning auctions or comparative reviews are profiled here. From the analysis that follows, it is clear that most jurisdictions see significant merit in licensing new entrants for the reasons provided in this submission, as the following quote summarizes:

**The hope of many governments is that the [3G] license opportunity will be seized by new players from the Internet, entertainment and information industries, and that it will lead to the creation of a whole new dynamic business rather than the extension of existing cellular service.**<sup>23</sup>

In addition, most jurisdictions do not seem to be concerned with allowing additional competition into markets that are significantly more penetrated than Canada. This is so primarily because:

- As discussed in the previous section, ARPUs are expected to increase significantly with the advent of sophisticated wireless data services;
- The number of subscribers are expected to grow by several times in the next three to five years:

**According to International Data Corp. (Canada) Ltd., the Canadian mobile phone market will have 6.7 million subscribers by the end of this year. That number is expected to rise to 16.6 million in 2003.**<sup>24</sup>

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<sup>22</sup> Ibid.

<sup>23</sup> Global Mobile, January 19, 2000, page 12

<sup>24</sup> The Globe & Mail, February 29, 2000, "FCC head says wireless traffic jamming spectrum"

- As discussed earlier, new operators are expected to differentiate themselves significantly from current players, enabling them to carve out significant market share.

#### 4.1 Overview

The following is an analysis of the main European countries planning to license 3G in the near term. Information is provided that is germane to our discussion in comparing other jurisdictions to Canada.<sup>25</sup> The number of operators and penetration provide an idea of how competitive the current market is. In addition, policies such as set-asides and roaming illustrate the extent to which the country wishes to go in encouraging new entry.

##### United Kingdom

Number of Incumbent Operators:	4
Penetration June 1999: <sup>26</sup>	29%
Set-aside:	Yes
Roaming:	Yes
Licensing:	March 2000

##### Spain

Number of Incumbent Operators:	3
Penetration June 1999:	25%
Set-aside:	Yes
Roaming:	Yes
Licensing:	March 2000

##### Portugal

Number of Incumbent Operators:	3
Penetration June 1999:	38%
Set-aside:	Yes

<sup>25</sup> The information included in this section is based on the September 1999 to February 2000 issues of Global Mobile and 3G Mobile.

<sup>26</sup> Global Mobile, September 30, 1999, page 12

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Roaming:	Yes
Rollout Requirements	POPs Covered: 20% YR 1, 40% YR 3, 60% YR 5
Licensing Process Start Date:	QIV 2000
Licensing:	QI 2001

**Germany**

Number of Incumbent Operators:	4
Penetration June 1999:	21%
Set-aside:	Yes
Roaming:	N/A
Licensing:	May 2000

**Italy**

Number of Incumbent Operators:	4
Penetration June 1999:	42%
Set-aside:	Yes
Roaming:	N/A
Licensing:	August 2000

**France**

Number of Incumbent Operators:	3
Penetration June 1999:	23%
Set-aside:	Yes
Roaming:	N/A
Licensing Process Start Date:	March 2001

Other jurisdictions that are planning to license 3G include Korea, Hong Kong, Taiwan and Sweden, while in Finland 3G spectrum has already been licensed.

One additional country of note is Israel, which although is not planning at this point to license 3G spectrum, has recently announced the process for licensing a fourth operator and has plans for a fifth license within the next two years. This even though the three

operating cellcos have between them penetrated more than 40% of a market consisting of total population of only 5.8 million.<sup>27</sup>

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<sup>27</sup> Global Mobile, September 30, 1999, page 12

## 5. Spectrum Requirements of the Incumbents

In the Gazette Notice, the department requests suggestions on how to deal with parties that are delinquent with respect to their current PCS license conditions:

**Furthermore, the Department invites comments as to how it should view the potential eligibility of any party that is licensed for the provision of personal communications services under the *Radiocommunications Act* but is not in compliance with its existing license conditions. Specifically the Department requests views as to whether such parties (and their affiliates) should be required to be compliant with existing PCS license conditions before being eligible to acquire additional spectrum.<sup>28</sup>**

The mere mention of this issue in the Gazette Notice belies the fact that current licensees may be in breach of their license conditions.

If this is the case, and current licensees are not in some way held to account for their delinquency, then the Department's entire regime for ensuring the public interest is upheld through its licensing process is put into question. If revoking delinquent licenses is not considered appropriate in the cases in point, the only other method the Department has of dealing with the situation is to limit access by these licensees to additional spectrum. It is especially appropriate in this case, where the spectrum in question is actually additional PCS frequencies within the same general band.

**We therefore urge the Department to take a strong stand with respect to current licensees by requiring full compliance with their conditions of license as a pre-requisite to being allowed to participate in the auction.**

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<sup>28</sup> Gazette Notice, Section 3.2

### **5.1 The Record of Established Operators Indicates Sufficient Spectrum Exists**

The possible non-fulfillment by the incumbents of the rollout requirements included in their license conditions provides the Department with an indication as to what the true spectrum needs of the incumbents really are. Since incumbents are not fully utilizing their spectrum, they should have ample room within their current allotted bands to grow their voice business and to implement next generation services. This is in fact the case in other areas as well:

**While separate operators may feel some capacity pressures, for Europe and the U.S. as a whole, the allocated frequencies for cellular (800/900 MHz) and PCS/PCN (1800/1900 MHz) appear sufficient for the foreseeable future. Unlike the case in Japan, capacity needs in the U.S. and Europe will not serve as a driver for constructing 3G networks. (However, a perceived need “to grab” spectrum will serve as a driver.)<sup>29</sup>**

An article in a recent issue of *Telephony* magazine is somewhat more blunt about the fact that ample spectrum is available in current allocations:

**Many operators can't imagine needing anywhere near the original 30 MHz block of spectrum designed for 3G. Sprint PCS currently uses only about 1.5 MHz in most markets and owns upwards of 30 MHz in each area, said a spokesman for Sprint PCS.<sup>30</sup>**

This is indicative of the situation in the U.S. where incumbents are planning to deploy 2.5G technologies within their current allotments. In fact, while the FCC has recently announced 3G allocations in the 700 MHz range, there is very little discussion on additional allocations for 2.5G. Clearly, sufficient spectrum holdings are sufficient to deploy these interim technologies.

In light of the above, structuring the auction so that it favours incumbents flies in the face of the public interest, which would dictate that the spectrum should go to those who require it and will put it to the best use. Incumbents have sufficient spectrum and have

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<sup>29</sup> The Shosteck Report, page 53

<sup>30</sup> Telephony Magazine, January 10, 2000, Page 8: "Spectrum Shake-up for Global 3G?"

underutilized their current allotments in breach of their rollout requirements under their conditions of license. Clearly, they should not be advantaged in the upcoming auction.

## 6. The Case for a Set-aside

In the preceding sections, we have shown that competitive entry will:

- Advance the advent of wireless data applications and services in Canada by some two to four years;
- Create thousands of jobs and stimulate billions of dollars in new investment;
- Put Canada at the leading edge of 3G service and application development; and
- Stimulate activity and innovation by all industry players to the benefit of all operators and their customers.

We have also noted that the record of incumbents with respect to their compliance with current PCS licenses is questionable and therefore any claim they may have that additional spectrum is required to grow their systems is equally in doubt.

In light of the above, it is crucial that this opportunity is used to establish rules for the upcoming auction that encourage new entry to ensure that even more spectrum does not go under-utilized. We recognize that an auction should be open to as many players as possible. At the same time, this can be done in a way that reflects the current realities regarding spectrum availability and does not reward those that may be less deserving based on a history of slow or non-compliance with conditions of license.

***The Department should therefore set aside half of the available spectrum (20 MHz) for new entrants in order to obtain the greatest public interest benefit from the spectrum being licensed.***

Allowing incumbents to bid on all 40 MHz in effect provides them with an almost ironclad guarantee that no new players will enter the market. Four existing operators with incentive to gain spectrum that goes beyond what would be reflected in a business plan and with extensive capabilities to raise additional debt would obviously outbid new entrants, which are constrained by their business plan forecasts.

The skyrocketing market valuations of the established operators, based primarily on their existing subscriber bases, allow these players to take on significant additional debt. This will enable them to bid up the spectrum regardless of its actual value, in a move to keep additional competition out of the market.

Therefore, a decision by the Department not to set aside spectrum for new entrants would actually reward the incumbents to the detriment of new players and the public interest in general.

A set-aside, on the other hand, would bring with it all the benefits discussed above, including stimulated innovation, substantial investment and job creation, while still leaving half of the spectrum available for incumbents. This will introduce a heightened level of competition into the auction process, inasmuch as there would be four existing players vying for up to two blocks, assuming the Department further sub-divides the spectrum into 10 MHz blocks. If the incumbent spectrum is licensed on a regional basis, up to five potential operators would compete for the 20 MHz available to incumbents.

When licensing 2G systems in 1995, the Department recognized the value of new competition in the wireless market by allowing only new entrants to apply for the two available 30 MHz blocks. Incumbents on the other hand, were limited to one of the two 10 MHz blocks that were being licensed at the time. The benefits for the industry since that time have been immense. Aside from the billions more that have been invested and the thousands of new jobs created, service prices have fallen to unprecedented levels, well below average prices in the US.<sup>31</sup>

We are not asking for nearly as much in this round as that which was afforded to new entrants in 1995. We are not asking for a larger block of spectrum than that which will be offered to incumbents. (In 1995, incumbents received only 25% of the available spectrum; we are proposing that they receive 50% of the available bands). We are not even proposing that incumbents be restricted from bidding on more than one block, which leaves open the possibility that an existing player could obtain 20 MHz or just as much as we propose be set aside for new entrants. We are simply proposing a formula

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<sup>31</sup> Although, unlike the expectations for 3G, a benefit that did not materialize was service differentiation.

whereby a new entrant is assured some spectrum so that the public interest benefits mentioned earlier can be realized.

## 7. Matters of Public Policy

In Section 1 of this submission, we recommended that the Department establish the following policies with respect to the upcoming auction:

1. The 40 MHz comprising the C- and E-blocks should be sub-divided into at least two blocks of 20 MHz each. The Department may then wish to subdivide each of the 20 MHz blocks into smaller blocks of 10 MHz.
2. One 20 MHz block should be set aside for new entrants, to be licensed on a national basis. The Department should establish guidelines for the set-aside block (or blocks) that promote national coverage, open networks and deployment of technologies that integrate voice and data on an end-to-end packet switched network.
3. Incumbents should be directed to negotiate roaming arrangements with the new entrant to alleviate some of the disadvantage inherent in being last to market.
4. The remaining blocks should be open to all bidders, who are in good standing with respect to current license conditions, and licensed on either a national or regional basis.

Number 4 above is dealt with in detail in Section 5. The other three are reviewed here.

### 7.1 Spectrum Structure

When dividing spectrum bands into sub-blocks for licensing, one must determine the smallest increment of spectrum that will allow an operator to deploy a network without degrading service levels. In this case, that minimum is 10 MHz, split evenly between the base-to-terminal and terminal-to-base portions. Therefore, the Department could, if it chose to, divide each of the 20 MHz bands further into blocks of 10 MHz. Thus, up to four operators could receive licenses. Further, there is nothing stopping the incumbents (with the possible exception of Clearnet, who may thereby exceed the cap of 55 MHz) or any new entrant from aggregating two 10 MHz blocks, if one so chooses. Regarding which blocks should be reserved for new entrants, we submit that the new entrant blocks be reserved within the C-block to allow new entrants to obtain 20 MHz of contiguous spectrum.

## 7.2 Set-aside Requirements

In Section 6 above, we make the case for a set-aside. In this section, we propose some conditions that should be placed on the successful bidder for the set-aside block. These requirements are meant to ensure that the public interest objectives that the set-aside is meant to achieve are in fact realized.

### *1. Packet Switching Technology*

We envision the service provided by a new entrant, by virtue of the new entrant's clean technology slate, will consist mainly of wireless data transactions, with voice provided strictly on an ancillary basis. In this way, the new entrant will be differentiating itself in a substantial way from the incumbents. Although there may be a certain appeal to restricting use of the spectrum to data only, this would be very difficult to administer in the age of IP networks and the integration of voice and data. However, it should be possible to restrict new entrants, if not to a specific technology, then to deploying a packet switched network that integrates voice and data on the same platform, such as Internet Protocol, or IP. This would preclude new entrants from deploying a 2G network, an unwanted result since it would bring none of the promised benefits.

### *2. National Rollout*

New entrants should be required to rollout nationally, with the Department establishing minimum criteria. At a minimum, the licensee would need to deploy in each of the five regions (i.e., B.C., the Prairies, Ontario, Quebec and the Maritimes).

### *3. Open Networks*

New entrants will potentially deploy networks with very advanced wireless data capabilities beyond that which can be provided by incumbents due to their legacy networks and business systems. It would therefore be in the interest of all concerned to establish a policy of open networks, where new entrants would be required to establish roaming/resale relationships with incumbents, and vice versa. This will allow incumbents to take advantage of the advanced capabilities of the new entrant's network until such time as they can supply it themselves. At the same time, this policy will

enable the new entrant to take advantage of the footprint of an established carrier until it can deploy its national network.

Similar provisions were in place upon the licensing of second generation PCS carriers, when the Department, as part the license conditions, directed the incumbents to enter into roaming arrangements with the new entrants to facilitate competition in the early years. This policy has turned out to be a win-win, with the new entrants competing on a more even playing field and the incumbents reaping significant revenues. In our proposal, similar benefits will be achieved, with the added advantage of the new entrant being able to provide significant value to incumbents as well.

## 8. Proposal for a Process to Qualify New Entrants

In order to ensure that enough qualified new entrants are interested in applying for spectrum to warrant a set-aside, the Department should include, as part of the bidder qualification process, these additional steps, which can be carried out simultaneously with the standard qualification process:

### **Phase 1: Notification of Interest**

In this mandatory phase of the process, all new entrants wishing to be qualified for bidding on the set-aside block would be required to provide notification of their interest, including the following information:

- Proof of new entrant status: Each company must provide information regarding its corporate structure and ownership that shows that it is not an affiliate of one of the four incumbents.
- Commitment to National Rollout: Each company must commit to adhering to the rollout identified by the Department as the minimum requirement for national coverage. Alternatively, each company must submit a rollout plan of its own, using minimum criteria established by Industry Canada, to which it must adhere should it gain a license.
- All other information, including Canadian Eligibility and financial wherewithal, that is required to be submitted by all bidders as part of the qualification process.

### **Phase 2: Qualification Phase**

At this stage, Industry Canada determines, based on the information provided in Phase 1, which of the interested parties are qualified to bid on spectrum. The set-aside stands only if there are two or more new entrants that have qualified for the auction.

## 9. Conclusion

In summary, new competitive entry will bring the expected wireless data revolution to Canada from two to four years sooner than otherwise expected. New entrants will stimulate innovation, create jobs, promote investment and encourage incumbents to advance their third generation deployment plans. With regards to 3G in particular, new entrants are expected to provide the vision and focus necessary to make the expected revolution a reality.

These benefits will be realized if and only if new entrants obtain spectrum now. The investment community will only finance an industry outsider if it is perceived that it has gained a lead in the market. A set-aside of 20 MHz is the best, and perhaps, only chance for new competitive entry in Canada. A set-aside will have the spillover effect of creating even greater demand for the remaining spectrum, with the four (or five) incumbents vying over the diminished number of blocks.

***Well-financed entrants, with a fresh outlook and unfettered vision, are Canada's best chance to quickly capitalize on the converging streams of advanced wireless technology and the Internet and harness their tremendous potential.***

Incumbents, on the other hand, must protect their legacy networks and existing subscribers, which means they will likely follow a slower path to third generation services. Further, the fact that established operators may be in breach of their license conditions precisely because they have not fully utilized their current spectrum, along with the expectation that U.S. carriers will be using their current PCS allotments to overlay 2.5G onto their 2G networks, leads to the conclusion that incumbents have sufficient spectrum within their current allotments for their planned deployment of 2.5G technologies. Therefore, the public interest dictates that these players should not be advantaged in the upcoming auction.

In light of all of the above, we submit that:

- The Department should set aside 20 MHz for new entrants in order to obtain the greatest public interest benefit from the spectrum being licensed;<sup>32</sup>
- The new entrants should be encouraged to deploy the most advanced technologies available to preclude the entry of another cellular-like voice telephone service provider;<sup>33</sup>
- The new entrants, as well as the incumbents, should be encouraged to open their networks to the mutual benefit of all operators;<sup>34</sup>
- The new entrant spectrum should be licensed on a national basis, with minimum rollout criteria that must be met by the winning bidder;<sup>35</sup>
- A qualification process should be established to confirm the existence of at least two parties, outside the current industry participants, who would compete in an auction for the set-aside. <sup>36</sup>

With these provisions in place, the benefits outlined in this submission will be realized without harm to current players and to the advantage of the market and Canada in general.

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<sup>32</sup> See Section 6.0

<sup>33</sup> See Section 7.2

<sup>34</sup> Ibid.

<sup>35</sup> Ibid.

<sup>36</sup> See Section 8.0