

**Reply Comments
Of
TELUS Communications Company
To
Canada Gazette, Part I**

**Consultation on a Policy and Technical Framework
for the 700 MHz Band
and Aspects Related to Commercial Mobile Spectrum**

SMSE-018-10

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Executive Summary

1. In its first round comments in this proceeding, TELUS noted the importance of having the opportunity to bid on an adequate amount of 700 MHz spectrum to meet explosive growth in capacity demand caused by the rapid shift of consumers and Canada's small businesses from narrowband feature phones to smartphone devices, Internet sticks and tablets. 700 MHz spectrum is critical to operators bringing mobile broadband to these customers both nationally and particularly, in Canada's globally atypical¹ lower density regions and mountainous west.
2. We note, as do other parties, that it has become clear that the shift in customer usage patterns associated with a shift from narrowband to broadband applications is stressing² networks, particularly TELUS' where there is such a high ratio of customers to spectrum and also a higher than average proportion of postpaid business and consumer smartphone users.
3. TELUS has a pressing need to implement LTE as this new technology is essential for managing this shift to data-centric services in an efficient manner. Access to 700 MHz spectrum is critical given that this spectrum, in combination with AWS spectrum, has been earmarked as the principal spectrum for the LTE ecosystem in North America.
4. It is critical that the evolution to LTE is not delayed and that operators with the most incentive to build, particularly as it relates to rural, are not restricted from so doing.
5. Due to the distortions in auction price directly caused by the set aside in the AWS auction, which amounted to an overpayment of approximately \$1.5 billion³, TELUS reiterates its support for an open auction. This would ensure that all bidders are treated fairly and in order that more investment is directed to infrastructure and innovation in the 700 MHz auction.
6. The 2008 wireless entrants use very misleading data to allege that national incumbents like TELUS have no need of spectrum and are in fact using spectrum inefficiently. However, we demonstrate that TELUS is not "like" other incumbents.

¹ Canada trails only Australia in terms of the lowest revenue per square kilometer according to Bank of America Merrill Lynch.

² TELUS has seen an increase from an average consumption of 36 MBs per month to over 220 MBs or a six fold increase as our customers migrate from CDMA to HSPA networks in order to take full advantage of the mobile Internet in 2010.

³ Refer to the NERA Study: Regulatory Policy Goals and Spectrum Auction Design - Lessons from the Canadian AWS Auction, March, 2009. (TELUS filed this report with its initial SMSE-018-10 submission).

7. Our evidence rebuts this proposition and supports the argument that TELUS, of all incumbents and entrants, is the most spectrally efficient wireless carrier in relation to other Canadian and major U.S. operators and has the most pressing need, due to a relative deficiency of spectrum, to evolve to LTE at 700 MHz in order to manage increased demand for broadband applications.
8. As we will describe below, despite the characterizations of TELUS found in entrant submissions and the repeatedly referenced but unfiled Seaboard report⁴, TELUS is not in a similar position in terms of spectrum holdings as national mobile operators Bell and in particular Rogers which has nearly three times the commercial mobile spectrum held by TELUS.
9. Moreover, while TELUS is an incumbent in Alberta and British Columbia, TELUS only entered the wireless market in the rest of Canada in the last decade, as a result of an aggressive investment strategy to become a national player. For all intents and purposes, TELUS is the “original” new entrant in most of Canada, with the notable difference between it and other entrants being that its entry resulted from investments carrying material risk rather than through a subsidized set aside. Ironically TELUS is regulated like an incumbent outside of its ILEC territory, even though it is the number three carrier in terms of subscriber and spectrum share in these markets.
10. Roughly a decade ago, through acquisition and at great expense, TELUS grew from a regional incumbent in Alberta and British Columbia into a national competitor with no advantaging or privileging by government along the way. In fact, rather than support this expansion at the time, government policy actually forced TELUS to return spectrum, worth hundreds of millions of dollars, for re-auction to its competitors under a spectrum cap.
11. As we detailed in our initial submission, in 2000, when TELUS pursued its ambition to evolve from a regional incumbent to a national mobile operator via the \$6.6 billion acquisition of Clearnet, Industry Canada, based on the then in place spectrum cap, stripped TELUS in all its ILEC territories of 20 MHz of the 30 MHz spectrum it bought (valued at circa \$300 million) without compensation.
12. In 2001, Industry Canada auctioned this same spectrum to Bell and speculator W2N (who subsequently sold to Bell) for \$22 million⁵, while TELUS was not allowed to bid on it. Thus,

⁴ The spectrum position of TELUS has been attacked speciously by a Seaboard Group report – *Over the Rainbow: Thoughts on the 700 MHz Discussion*, February 2011. The report makes certain absurd conclusions which are reiterated repeatedly by entrants, none of whom chose to actually place this report on the record.

⁵ The spectrum was auctioned off within a year again with no compensation to TELUS.

as a result of the spectrum cap in place at that time, Bell gained a regulated advantage over TELUS in terms of spectrum holdings, without any benefit to the market as a whole.

13. Shortly thereafter, in the midst of an acquisition process for Microcell, the Department materially shifted policy and lifted the spectrum cap, allowing Rogers to step in and acquire not only an additional 30 MHz of spectrum without penalty but also the substantial 2500 MHz assets of Microcell, without any open licensing process, thus bestowing upon Rogers a spectrum leadership position that it continues to hold today.
14. TELUS notes that the national investment strategy it commenced a decade ago, despite the material risks, survived in 2002/3 in what could be described as the “perfect storm” – the implosion of the telecom sector in North America, the tightening of credit markets and the CRTC rebanding and contribution decisions which had a material impact on TELUS’ costs. TELUS’ expansionary strategy at the time, in the face of these enormous headwinds, posed challenges for TELUS as its share price plummeted precipitously, by 85%⁶, and a credit rating agency lowered its rating on TELUS debt to junk bond status⁷ causing the market value of TELUS bonds to be cut in half.
15. We would also point out that the significant risk TELUS was willing to take at the time came without any government intervention in support of our investment strategy to create national competition. Accordingly, we submit that government should not ignore the fact that cable companies and regional operators seeking special treatment today are the same operators that passed on similar opportunities to invest and compete at that time. The success of a corporation is the sum total of the choices and decisions it makes; particularly choices that entail risk. It is both distortive and unfair where government introduces policies that render the need to take risks meaningless as it rewards operators, such as cablecos and regional ILECs, that deliberately chose to invest in other opportunities, or pass on them altogether. No business strategy deserves a second chance from the government of Canada, if it turns out to be misguided, particularly when it comes at the expense of operators that invested in the face of large scale risk at the time.
16. In particular, we would note that both Videotron and Shaw were shareholders in Microcell but exited that arrangement due to the financial challenges Microcell faced. If Shaw has the financial resources to spend \$2 billion on Canwest Global and Bragg can buy a telecom operator in Bermuda for \$70 million, these parties do not need advantaged or subsidized treatment.

⁶ TELUS common shares closed at \$40.95 on January 2, 2001 and \$6.10 on July 26, 2002.

⁷ On July 25, 2002, Moody's lowered its ratings of TELUS' long-term credit and senior unsecured debt to Ba1 (non-investment grade) from Baa2. The outlook for the Moody's rating was also negative.

17. Similarly, MTS chose to invest in Allstream's wireline assets rather than pursue a wireless opportunity at that time. In fact, while MTS was treated in the last auction as a "new entrant" to promote competition, even in Manitoba where it is the dominant incumbent, TELUS would submit there is little evidence in its history within Manitoba to suggest that it has contributed to more competition. First, MTS entered into a non-compete agreement with Bell Canada with respect to wireless, which limited wireless competition in the Manitoba market and more recently Rogers and MTS have entered into a joint arrangement to share both the ILEC and Rogers blocks of spectrum at 850 MHz. However, unlike other entrants, TELUS, which has no market incumbency in any market in Manitoba, is treated as an incumbent in Manitoba and has no mandated roaming rights and is therefore significantly disadvantaged relative to other entrants in that province when it comes to providing roaming for its Manitoba customers.
18. The Manitoba scenario is particularly inequitable as TELUS has made capital investments exceeding \$250M in that province over the past decade and is investing a further \$22M in 2011 as part of an HSPA+ Dual Cell upgrade to support wireless service speeds of up to a manufacturer's rated 42 Mbps. Competitive investments of this magnitude in much smaller markets are not required for operators with mandated roaming rights and TELUS' investments in Manitoba are comparable on a per-pop basis to the type of investment new entrants only make in the most populous areas.
19. The wireless entrants' comments in the first round not only ignore how much investment⁸ and risk was required for TELUS to get to its current spectrum position, but also the vast difference in relative spectrum holdings between TELUS and the other incumbents as well as the similarities in terms of such holdings between TELUS and the 2008 entrants. Additionally, these parties totally discount the fact that TELUS by the nature of the market it serves in Alberta and BC is faced with one of the most hostile and costliest terrains to serve in Canada and in most other major markets we are compared with.
20. Wireless entrants, including incumbent cable companies, have alleged that TELUS, like other national incumbents, has more than enough spectrum. The empirical evidence refuting this in the case of TELUS is unassailable. The allegations not only ignore the

⁸ TELUS' Information, Communications and Technology (ICT) investment in terms of capex for the decade 2000 – 2010 was \$20 billion. In a knowledge based economy like Canada's, ICT investment is a pillar of productivity growth.

substantial differences in total holdings between TELUS, Rogers and Bell⁹, but more importantly, they ignore the actual relative number of customers such spectrum serves.

21. The adequacy of spectrum per carrier has to be measured relative to the number of subscribers that are served by such spectrum and not simply by the total amount of spectrum held by a carrier. In this respect, TELUS has a greater number of customers to spectrum holdings than any other national incumbent in Canada or any entrant and in fact any major operators in the U.S. As we will show empirically, there is no merit to the claims by some respondents to this consultation that TELUS has no spectrum scarcity or that TELUS by any benchmark is using spectrum inefficiently.
22. More so than other operators in Canada, exponential growth in mobile data demand is challenging TELUS' networks given TELUS' high customers per unit of spectrum and TELUS' large and growing population of high end smartphone and tablet users. As footnoted above, TELUS sees on average a 6x increase in mobile data usage when customers migrate from CDMA feature phones to HSPA+ devices.
23. This step change in demand due to broadband usage has resulted in a more rapid exhaust of spectrum and an acceleration of TELUS' program of cell site densification. TELUS' home territory contains the country's most demanding topology driving up the cost of deployment in terms of cell sites and backhaul and hence the cost of network densification to battle spectrum exhaust.
24. More importantly this broadband transformation has resulted in TELUS accelerating its plans¹⁰ to roll out LTE in urban areas on AWS spectrum rather than wait to deploy LTE on AWS spectrum in combination with 700 MHz in order to maximize the efficiency of its LTE rollout. Following extensive field testing in 2011 and the completion of an RFP process currently underway, construction on TELUS' next generation, 4G+ LTE network will begin in the latter half of 2011 in major urban markets across Canada. TELUS' LTE network will operate on the AWS spectrum that TELUS purchased for \$882 million in Industry Canada's auction process in 2008.

⁹ As at year end 2010, Rogers has almost 3x as much spectrum as TELUS but only 28% more customers and Bell has roughly 2x the spectrum of TELUS and roughly the same number of customers.

¹⁰ The Seaboard Group report – *Over the Rainbow: Thoughts on the 700 MHz Discussion*, February 2011 and most new entrants have accused TELUS of hoarding and warehousing AWS spectrum. Nothing could be further from the truth. First, hoarding AWS makes no sense according to economists when there is no foreclosure value as is the case with a 40 MHz AWS set aside. Secondly, a public company like TELUS spending \$882 million on AWS spectrum to simply let it lie fallow would be impossible in today's corporate governance environment and there would be no shareholder appetite for such a strategy. TELUS notes that it will likely have deployed AWS spectrum with next generation technology before EastLink and Shaw have deployed their AWS spectrum purchases, presumably with current technology, not LTE.

25. TELUS believes that the timing of its LTE launch in 2012 is appropriate and opportune given its desire to leverage the economies of scale in the manufacture of LTE equipment, the hardening of LTE technology for market readiness, the progression in the development of LTE-capable data devices and smartphones and the need to synchronise the higher bandwidth capabilities of LTE with the accelerating appetite of clients for data rich services.
26. However, even with the accelerated rollout of LTE on AWS spectrum, TELUS will still require spectrum at 700 MHz to complete its network evolution to LTE in terms of both high capacity applications in urban centers including in-building extension and coverage in less dense suburban and rural geographies, where only low band spectrum is economically viable for extended geographic coverage. In the case of LTE for rural broadband, access to 700 MHz spectrum is critical, first because this is the ecosystem being deployed and second because only low band spectrum has the propagation characteristics necessary to cover Canada's abundant low density areas. In our view, constraining TELUS' ability to further advance its network would be very detrimental to wireless competition and innovation in Canada. As noted, 700 MHz is seen as the primary and de facto spectrum for the LTE ecosystem in North America and an inability to access 700 MHz spectrum at auction would diminish TELUS' opportunity to manage demand growth and limit the roll out of LTE in most smaller sized communities in Canada. It is highly unlikely that entrants would build networks as extensive as what TELUS has already demonstrated it will build, in particular into rural communities.
27. TELUS' demonstrated willingness to invest in next generation HSPA+ network infrastructure has resulted in advanced services to over 95% of Canadians and world leadership in innovation from new radio access network (RAN) topologies, the latest in softswitch intelligence and leading edge Ethernet backhaul to maximize broadband speed and quality. This was accomplished ahead of similar investment curves anywhere in North America.
28. With 700 MHz spectrum required for an operator to be part of the North American LTE ecosystem, access to a sufficient quantity at auction would not only provide TELUS with the opportunity to replicate again what it has accomplished for Canada with its HSPA+ leadership but assure the more widespread availability of the benefits of LTE technology. It is clear that only incumbents like TELUS have the scale and, more importantly, the will to deploy advanced infrastructure to Canadians outside of major urban markets. And only incumbents like TELUS have the scale to deliver the broadest range of advanced devices that support innovation and productivity on these networks. Failure to support TELUS' opportunity to deploy LTE, virtually guarantees a prolonged delay in closing the digital

divide and delivering the benefits of a digital economy to the greatest number of Canadians.

29. The HSPA+ network that TELUS has built by definition supports an order of magnitude increase in mobile Internet consumption but also by definition increases Canada's innovation and productivity. Given a proven record in investing in advanced infrastructure, TELUS does not deserve to be penalized for staying ahead of the curve when it comes to leadership in encouraging mobile broadband adoption and its associated benefits to the country. Figure 1 below demonstrates TELUS' in-territory 4G build out in comparison to the very limited build out to date of 4G in Western Europe.

Figure 1 – TELUS 4G Coverage versus 4G Coverage in Western Europe as at Year End 2010



30. In our view the extent of our leadership when it comes to investment has earned us the right to compete for spectrum to build an LTE network and our evidence to follow demonstrates empirically that our need for additional spectrum is greater than new entrants and all other major operators in North America¹¹.
31. Another point for government to understand and accept is that despite the success of the AWS auction in inducing entry, the pressures among entrants to consolidate to achieve economies of scope and scale as regularly professed by analysts and the entrants themselves are very real. There are few jurisdictions if any that support the large number of operators currently operating in Canada¹². In fact consolidation is being pursued globally and in larger markets than Canada that one might expect to support more

¹¹ It is worth noting that TELUS has the greatest need in North America and North America derives 33% of its revenues from mobile data versus 28% in Europe as of Q3, 2010 according to the estimates of Bank of America Merrill Lynch Q4 2010 Wireless Matrix report.

¹² The Bank of America Merrill Lynch Global Wireless Matrix 4Q10 notes only three countries of 21 developed countries with as many wireless players as Canada. The report also highlights Canada as one of only four of the 21 developed countries compared where the top 2 operators had less than 70% market share. Further, per Figure 40 in the Nordicity report filed with TELUS' original submission, Canada has the second lowest gap in market share between the 1st and 3rd player, behind only the U.K.

operators. This is recently evidenced by the expected to be completed in-market merger of Orange and T-Mobile in the U.K and the potential acquisition of T-Mobile USA by AT&T.

32. Consolidation amongst wireless entrants¹³ is inevitable and is likely to dramatically change the basis of any assumptions that will be used this year by government in the design of the 700 MHz and 2500 MHz auction rules. Without any help from government, and prior to the next auctions, the spectrum holdings of any combined entity are expected to be much higher than what individual entrants currently hold today. Therefore, any rules like a set aside that artificially inflate the spectrum inventories of entrants without recognizing this dynamic would be misguided.
33. As well, the argument that incumbents will buy up all available spectrum in an open auction is simplistic and fails to recognize the financial strength and, in some cases, very real market power of the various competitors. The wireless entrants are either large and cash flow rich in the case of cable and regional wireless operators or foreign backed and typically short term ROI focused in the case of pure play entrants. As such these entrants should all be required to invest in spectrum on an open market basis.
34. Because it would forestall the rollout of LTE in rural areas and directly undermine the digital economy strategy objective of increasing broadband access using wireless technology, a large set aside for new entrants (especially a set aside without rigorous build out requirements) as requested by many entrants would limit the benefits of LTE to a small number of primarily urban centers. This suggests that rather than reward entrants when they are calling for longer build out periods, government must link any licence, whether resulting from an open market model or an interventionist one, with strict and enforceable build out obligations. Spectrum at 700 MHz is too valuable in terms of national goals to lie fallow.
35. Further, a large set aside for new entrants would also detrimentally impact productivity and innovation by reducing what would otherwise be a more ubiquitous service to all Canadians. TELUS notes that its networks tend to support the complex needs of business enterprise customers (as well as the small business and consumer segments) for high end devices intended to enhance productivity, while entrant networks more typically target

¹³ As recently as March 31, the CEO of Public Mobile, Alek Krstajic, commented on the record “We are extremely well capitalized. I would love to be an Acquirer. I think one or more of the other new entrants (will) run out of money by the end of this year.” On December 21, 2010, Mr. Krstajic stated, “I don’t think there is any question in my mind that it would be good for all parties concerned that the new entrants consolidate.”

<http://www.financialpost.com/news/Public+Mobile+fighters+hold/4010412/story.html>

Note: Consolidation of originally set aside AWS spectrum is limited to Canadian controlled companies with less than 10% national mobile market share by revenue at present and until circa 2014, i.e., well after the forecasted 2012 auction(s).

discount consumer segments in the case of pure play entrants and households through bundling in the case of cable entrants. Households and discount consumer segments are important but ubiquitous national incumbent networks are the foundation for enhancing productivity through the use of mobile computing.

36. If the government is serious about the innovation agenda, Advantage Canada¹⁴, closing the digital divide, then short fused¹⁵ build out conditions on these valuable 700 MHz licences are paramount. The consequences of breaching these build out conditions must be swift and far reaching.
37. In our view the primary issue in this proceeding, as opposed to the last auction, is not to induce more entry, that job is done, but to ensure the widest availability of LTE networks in the shortest period of time to maximize Canada's productivity and innovation and reduce regional disparities.
38. Increased entry was achieved via the 2008 auction. There are five or six or more operators now in most urban markets, including three national operators offering extensive geographic coverage as well as dominant regional operators operating in Saskatchewan, Manitoba, Quebec and soon Alberta/BC with the pre-announced entry of Shaw. Entry is no longer the issue.
39. The predominant policy issue now to be addressed is how to balance entrant and incumbent spectrum needs with the release of limited sub 1 GHz spectrum, if in fact the government is not prepared to rely on tried and true open markets for such a purpose.
40. It is well documented that infant industry protectionism does not build strong sustainable companies, but weak ones. Open markets and competition build strong companies as evidenced by TELUS' upbringing. If the government again in the 700 MHz auction provides advantaged or subsidized treatment to a subset of the industry, then where does the protectionism stop? It has become an obvious fact of history in telecommunications that regulation intended to encourage or protect infant industries doesn't work in multi-carrier markets, because competition and technology continue to alter market dynamics even as protectionist regulations persist and become more complex.

¹⁴ Advantage Canada is the government's strategic, long-term economic plan launched in 2006 and designed to improve our country's economic prosperity both today and in the future.

¹⁵ Unlike the auction of AWS spectrum that had a bifurcated ecosystem (entrant HSPA / incumbent LTE), both of which were largely undeveloped at time of licence issue, the 700 MHz auction licences will be issued with equipment and devices effectively "sitting on shelves".

41. If the government does not implement a 700 MHz spectrum auction that relies on open markets, then it must craft a light-handed intervention that still remains valid in the likely event of entrant consolidation before or after auction.
42. As we note above, the more open the auction, the greater the likelihood that bidding will be efficient, outcomes undistorted and sustainable, and returns to the Treasury maximized in a fair way, without revenues that should be going to building networks across Canada being again diverted by auction gaming enabled by a set aside.
43. Therefore, to the extent that government deems it necessary to intervene on behalf of entrants in order to achieve its objective of promoting additional competition in wireless, it must do so in the least intrusive manner possible and in a way that does not detrimentally impact a carrier's ability to invest in LTE. If open auctions are not allowed, then an auction cap is generally a better alternative than a set aside¹⁶. However, any cap must be set so that there is at least the opportunity to bid on sufficient spectrum to realize the efficiencies that LTE can deliver.
44. As TELUS noted in its initial comments any 700 MHz auction cap should be set to allow TELUS the opportunity to bid on a minimum of 24 MHz of spectrum at 700 MHz in all regions of the country. We submit this is reasonable, given TELUS' spectrum position, the magnitude of our client base and escalating rate of consumption that must be supported to deliver advanced mobile broadband services.
45. Similarly, if a sub 1 GHz cap¹⁷ were implemented, it should be set at 49 MHz (i.e., 25 MHz at 850 MHz + 24 MHz at 700 MHz) for TELUS in order to allow TELUS with a 25 MHz cellular 850 allocation in a region to bid on two 6+6 blocks of 700 MHz spectrum. This would result in sufficient spectrum to roll out LTE in a meaningful fashion and accelerate the roll out of rural broadband using LTE by TELUS which has demonstrated a willingness to build.
46. In conclusion, TELUS submits that:
 - a. Because 700 MHz will be the primary spectrum for the LTE ecosystem in North America, TELUS, offering service to the vast majority of Canadians, must have

¹⁶ By this we mean that if a certain set aside and a certain cap produce generally the same limiting effect on the aggregate purchasing eligibility of unprivileged bidders, we would choose the cap because of the significantly decreased risk of auction gaming associated with a cap versus a set aside.

¹⁷ We note that Ofcom has in March, 2011 proposed a cap for sub 1 GHz spectrum in its upcoming auction of "digital dividend" 800 MHz spectrum of 55 MHz (i.e., 2x 27.5 MHz) for similar reasoning. Ofcom has also proposed a cap across all holdings of 210 MHz (i.e. 2x 105 MHz). <http://www.telecoms.com/25715/ofcom-to-limit-uk-4g-spectrum-auction/>

the opportunity to bid on this spectrum or widespread LTE deployment will be delayed.

- b. TELUS is the most spectrally efficient major carrier in North America and has the most pressing need for more capacity to support its broadband customer base.
- c. Access to 700 MHz for TELUS is critical to support truly innovative broadband applications throughout Canada, rural build outs and the needs of first responders that will likely rely on this ecosystem.
- d. Consolidation is occurring globally and will very likely occur between entrants before or shortly after the next auction(s) reducing the validity of arguments that spectrum must be reserved for entrants.
- e. Cable companies and regional operators have the financial resources to bid and be successful in an open auction and should not be advantaged in the auction.
- f. Globalive's principal shareholder is likely to become Russian giant VimpelCom assuming its merger with Orascom creates the fifth largest wireless carrier in the world with 176 million subscribers. Either way, Globalive has the resources to bid in an open auction.
- g. If an open auction is rejected then an auction cap is generally a less distortive mechanism because a cap still encourages fair and honest bidding, without the high risk of hundreds of millions of dollars being diverted by inappropriate gaming of the system.
- h. Any cap must allow TELUS¹⁸ to bid on at least 24 MHz of paired 700 MHz spectrum nationally
 - i. given TELUS' current lagging spectrum position;
 - ii. given the magnitude of our client base and the rate of consumption of advanced mobile broadband services that we need to support; and
 - iii. to leverage the efficiencies of wideband LTE, particularly in serving rural/remote areas where complementary high band overlays are not economic.

¹⁸ TELUS notes in this regard that it would support the cap mechanism proposed by Shaw and Videotron (i.e., two FDD block cap in general but a one FDD block cap where an operator holds 850 MHz spectrum) with the exception that (a) TELUS be waived from being limited to one block where it holds 850 MHz in a onetime allowance associated with the 20 MHz it previously had stripped where it held 850 MHz, and (b) Shaw and others' proposal that TELUS be treated as a single bidder with Bell be thrown out based on TELUS detailed analysis to follow.

- i. In order to ensure that 700 MHz is utilized outside of key urban areas there must be a “use it or lose it” build out requirement in all Tier 3 service areas that TELUS suggests should be invoked three years after licence issue.

Key TELUS Reply Comment Themes

TELUS is not the same as Bell and Rogers when it comes to spectrum – TELUS was the “original” new entrant in most regions of Canada

47. Based on misrepresentations found throughout the various submissions to Industry Canada’s 700 MHz consultation, TELUS is compelled to set the record straight in differentiating itself from other incumbent mobile operators. In this section we describe how TELUS acquired its spectrum to become a national carrier and in the next sections we discuss how relatively undersupplied TELUS is in relation to other operators.
48. The period from 1985 to 1995 in the mobile industry in Canada was one of deep investment and pioneering by Canada’s regional ILECs and Rogers Cantel, the national champion selected via comparative review. In 1995, Industry Canada selected again via comparative review two more national champions, Clearnet and Microcell. Through this comparative process over 10 years, government created three national licensees and licenced the regional ILECs in their home territories. Having no overlapping territory or spectrum, and, more significantly, no national reach, the regional ILECs banded together under the Mobility Canada banner to serve a business market that required services on a national scale.
49. Only a little more than a decade ago TELUS, itself a combination of the regional ILECs in Alberta and BC and holder of 12% of the granted spectrum in Canada, embarked on a strategy to break away from the Mobility Canada Alliance to become a national carrier.
50. TELUS succeeded in this endeavour as a result of a series of investments and acquisitions, the largest and most relevant of which was the \$6.6B acquisition of Clearnet in 2000 in order to expand by a factor of four¹⁹ the population coverage of its wireless footprint beyond the borders of Western Canada and into all of Canada.
51. TELUS’ capital-intensive national wireline and wireless expansion strategy carried with it material risk and ran into a “perfect storm” scenario in the telecom sector in Canada in 2002 /3. This long term strategic investment decision was pursued during a full scale collapse of the telecom sector on world markets, a tightening of the credit markets globally and in Canada specifically the introduction of a negative contribution and rebanding decision²⁰ by the regulator. These circumstances lead to a roughly 85% decline in TELUS’ share price²¹. In July 2002, a major credit rating agency lowered its rating on

¹⁹ TELUS’ wireless footprint expansion from 7 million to over 30 million covered pops was a step function increase.

²⁰ The rebanding decision had a recurring \$300 million EBITDA impact on TELUS.

²¹ TELUS common shares closed at \$40.95 on January 2, 2001 and \$6.10 on July 26, 2002.

TELUS' debt two notches to non-investment grade or junk bond status causing the market value of TELUS bonds to be cut in half²².

52. Entrants continue to allege that TELUS and other incumbents have a low cost of spectrum because much of it consists of initial grants of spectrum allocated at no upfront cost via comparative review²³. This ignores the true economic cost of such seminal licences which can easily be shown and it is also an allegation that is largely not applicable to TELUS given TELUS' full spectrum acquisition history.
53. TELUS' average cost of spectrum of \$1.88²⁴ per MHz-pop (including in this average granted spectrum at zero cost) is approximately four times²⁵ higher than every other incumbent in Canada (Rogers, Bell, SaskTel and MTS). None of these other incumbents has expanded from their originally granted footprints²⁶, nor were any, like TELUS, required to return spectrum (20 MHz) while pursuing growth. The partial exception is Bell which has expanded into Alberta and BC (a 30% increase in coverage by population), but because of the anomalies associated with the then in force spectrum cap and TELUS' acquisition of Clearnet, Bell was able to acquire 40 MHz of PCS spectrum in Alberta and BC²⁷ (including the 20 MHz clawed back from TELUS) at an average cost in the range of \$0.20 per MHz-pop.
54. TELUS' average cost of spectrum of \$1.88 per MHz-pop is also higher than every 2008 entrant²⁸. The idea that 2008 entrants should be advantaged at the expense of TELUS in a 700 MHz auction is extremely disconcerting to TELUS. The suggestion by many entrants in their submissions that somehow TELUS was granted a free ride in entering the national wireless market is completely unfounded. In fact TELUS' cost of investing in spectrum and mobile networks has been so substantial that through 2010, TELUS is still not cumulatively cash flow positive from the its investment made to become a national

²² On July 25, 2002, Moody's lowered its ratings of TELUS' long-term credit and senior unsecured debt to Ba1 (non-investment grade) from Baa2. The outlook for the Moody's rating was also negative.

²³ This assertion ignores the billions of dollars of investment to build and expand networks from scratch. Further, TELUS' granted spectrum represents only 12% of its spectrum. This percentage will undoubtedly drop further after the 700 MHz and 2500 MHz auction(s).

²⁴ This average unit cost of \$1.88 per MHz-pop includes all TELUS' granted spectrum at zero cost in the average.

²⁵ Refer to TELUS' original submission to this consultation, pg 62, Table 5 estimating average cost of spectrum for Rogers, Bell, SaskTel and MTS at \$0.42, \$0.50, \$0.44 and \$0.44 respectively based on publicly available information.

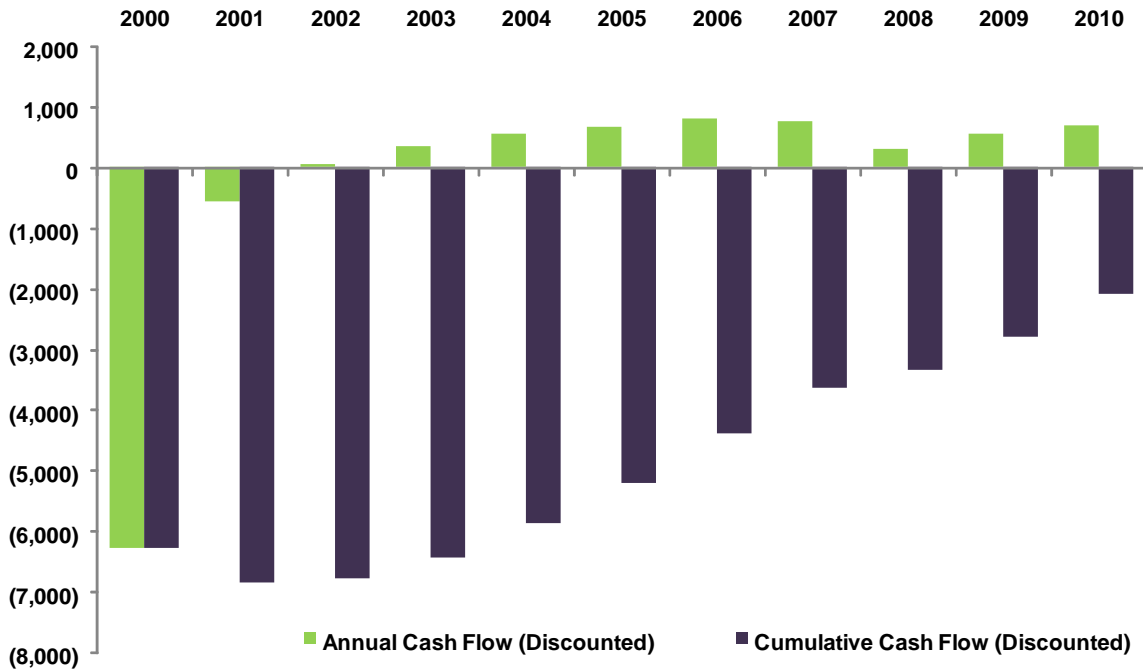
²⁶ Rogers's acquisition of Microcell brought it more spectrum and more customers, but all within Rogers' existing footprint.

²⁷ This includes 30 MHz in the 2001 PCS auction at or near the reserve price and later an additional 10 MHz from 2001 PCS auction speculator W2N. It is also worth highlighting that no entrants were willing to buy this spectrum at or near the reserve price.

²⁸ This is easily shown by reviewing the AWS auction results of 2008 and can be seen in TELUS' original submission to this consultation, pg 62, Table 5.

mobile operator. The following figure²⁹ provides a year by year view of TELUS' discounted wireless cash flows³⁰ on an annual and cumulative basis.

Figure 2 – TELUS Discounted Annual and Cumulative Wireless Cashflows (2000-2010)



55. Over the same timeframe that TELUS was expanding its operations nationally, the risks of wireless entry were deemed so high that many of the AWS entrants backed away from making, or maintaining investments. No AWS entrants participated in the 2001 PCS auction in Canada despite licences going unsold and many licences selling at or near the reserve price. AWS entrants Quebecor and Shaw, both having stakes at one point in Microcell, and despite their financial strength, twice decided not to rekindle or increase their exposure to wireless as Microcell went through creditor protection in 2002 and 2003.
56. Similarly, MTS decided to focus on a wireline strategy through the Allstream acquisition rather than purchase Microcell for a similar amount in 2004. Subsequently the combined MTS Allstream gradually reduced capital investment outside of Manitoba in favour of an in-territory focus on Manitoba and a greater dividend payout to its shareholders.

²⁹ Sources: Industry Canada; Nordicity Research.

³⁰ These are simple cash flows (revenue minus expenses minus capex) including spectrum payments and the Clearnet acquisition discounted at 8%.

57. In fact, while MTS was treated in the last auction as a “new entrant” to promote competition, TELUS would submit there is little evidence in its history in-territory to suggest that it has contributed to more competition. First, MTS entered into a non-compete agreement with Bell Canada with respect to wireless, which limited wireless competition in the Manitoba market. More recently Rogers and MTS have entered into an arrangement involving both the ILEC and Rogers’ blocks of spectrum at 850 MHz. Unlike other entrants, TELUS has no mandated roaming rights³¹ and is therefore significantly disadvantaged relative to other entrants in that province when it comes to providing roaming for its Manitoba customers.
58. The Manitoba scenario is particularly inequitable as TELUS has made capital investments exceeding \$250 million in that province over the past decade (restricted to the Winnipeg area) and is investing a further \$22 million in 2011 as part of an HSPA+ Dual Cell upgrade supporting wireless service speeds up to manufacturer’s rated 42 Mbps. Competitive investments of this magnitude are comparable on a per-pop basis to those of new entrants in more populous areas.
59. It is worth noting that it was during this same period that “entrants” abandoned or rejected the wireless business due to the risks, that TELUS embarked on unsubsidized efforts, at a cost of hundreds of millions of dollars, to establish a TV service to compete with the monopoly cable companies in TELUS’ ILEC territories. Yet TELUS has never requested nor obtained beneficial treatment for its market entry strategies like those granted in the AWS auction to these dominant operators. We submit that this time, such operators must assume more risk as we must. That is not a hardship in our view, particularly for cable companies that have exhibited sufficient market power to continually sustain price increases well above CPI for the last decade.
60. TELUS notes a certain irony that cable entrants that raise the issue of comparative licensing during the wireless industry’s formative years, overlook the generous cable franchises granted by the CRTC a decade earlier.

³¹ As far as TELUS can tell, TELUS and Rogers are the only operators without mandated roaming rights in Manitoba. At present, Rogers is in a commercially negotiated arrangement. TELUS is awaiting disposition of a request to Industry Canada for mandated roaming in Manitoba with a view to achieving a commercially reasonable arrangement with an incumbent 850 MHz licensee to permit TELUS customers within Manitoba the opportunity to roam for both voice and data services in-province.

61. In summary, TELUS:

- a. Is the only one of the original regional wireless operators in Canada to have expanded dramatically beyond its operating footprint³² by making national investments;
- b. As a result of this aggressive investment strategy, has paid more for its spectrum on an average unit cost basis³³ than any carrier in Canada, bar none; and
- c. Has neither cellular 850 MHz spectrum nor mandated roaming rights in three quarters of the country by population.³⁴

62. When it comes to the cost of spectrum and the lack of sub 1 GHz spectrum, TELUS has more in common with wireless entrants than it does with Rogers, SaskTel, Bell and MTS. There is no basis upon which to suggest that TELUS has not paid dearly for the opportunity to bring wireless innovation and competition to Canadians. TELUS should be treated in the upcoming 700 MHz and 2500 MHz auctions no differently than the 2008 entrants.

³² TELUS' wireless footprint expansion from 7 million to over 30 million covered pops was a step function increase. We exclude Bell who expanded by 30% after TELUS had broken from the Mobility Canada alliance.

³³ TELUS has paid \$1.88 per MHz-pop which is higher than any other operator in Canada. Refer to TELUS' original submission to this consultation, pg 62, Table 5.

³⁴ Most submissions highlight that TELUS has negotiated access to 850 MHz spectrum in Bell's operating territory by way of a network access agreement and TELUS addresses this point in detail in paragraph(s) 67 - 72

The entrants' comments deliberately ignore or obfuscate the vast difference in relative spectrum holdings between TELUS and the other incumbents as well as the similarities between TELUS and the entrants

63. In the previous section we described how TELUS was the only incumbent in Canada to pursue an aggressive investment strategy to increase its operating footprint. As a consequence, TELUS has paid the highest average unit cost for spectrum relative to incumbents and entrants.
64. In this section we address misinformation³⁵ around spectrum depth (expressed in MHz) submitted to the Department as part of the consultation. In the next section we describe why TELUS is the most undersupplied carrier relative to both other incumbents and entrants based on the simple normalized utilization metric of the ratio of mobile customers to spectrum quantity³⁶.
65. Clarifying the record with respect to spectrum depth submitted to the Department as part of the consultation requires a quick recap of definitions and principles.
- a. A MHz is a unit of bandwidth in the frequency domain and is best thought of as the measure of spectrum depth.
 - b. A spectrum licence has both a bandwidth (a frequency range) and a geographic territory associated with it. The **quantity** of spectrum associated with the licence is an important measure. The quantity is the product of the bandwidth of the licence and the geographic coverage of the licence. Bandwidth is measured in MHz. The geographic coverage of the licence (which might naturally be specified in square kilometres) is, by longstanding global convention, defined as the population (or “pops” for short) within the geographic licence area. Hence spectrum quantity is measured as bandwidth times population covered (i.e., MHz times “pops”). The unit of spectrum quantity is therefore the MHz-pop.
 - c. The normalized unit price of spectrum (referred to in the previous section) is expressed in \$/MHz-pop³⁷.
 - d. Market to market comparisons of spectrum depth (i.e., MHz) are informative. These comparisons are the subject of this section and are reviewed in detail. Spectrum depth in MHz is a good general comparator of operator capacity in a

³⁵ This section provides an accurate, transparent analysis of spectrum depth. We reference examples of the misinformation found in various submissions in the Errata Appendix in this document.

³⁶ Spectrum quantity is expressed in MHz-pops as per Industry Canada standards.

³⁷ Prices are also often quoted in \$/MHz/pop or \$ per MHz per pop which are both the same as a \$/MHz-pop.

market but if one is looking to consider spectrum utilization, spectrum depth is not the right parameter to be used as a denominator in spectrum utilization metrics³⁸. Spectrum depth is an incomplete denominator³⁹. Average spectrum depth is only one dimension of spectrum quantity. For utilization metrics, one needs to use the spectrum quantity in MHz-pops as the denominator.

- e. Indicators of spectrum utilization are more than informative; they represent the core data needed by the Department to inform policy because utilization is a proxy for need - the logic being that an operator whose spectrum is relatively heavily utilized has a relatively higher need for additional spectrum at auction given the surging growth in demand. Conversely, an operator whose spectrum is relatively underutilized in the near and medium term generally has a lesser relative need for additional spectrum at auction. This key utilization metric is the subject of the following section.

- 66. In the following paragraphs we present comparisons of spectrum depth over four geographic scales: nationally; regionally within Canada; across North America; and across North America and Europe.
- 67. Before we present the data, we clarify what spectrum is consistently⁴⁰ included and what is not and why.
 - a. We include as the baseline for Canada, the data published by Industry Canada as part of this consultation – all the allocated spectrum in the cellular 850, PCS, AWS and BRS bands. We include the same bands in the US and the equivalent bands in Europe. All spectrum allocated to date in these bands is included⁴¹.

³⁸ Such a metric (customers per MHz) is only meaningful in the case where a comparison of the same spectrum licence areas is being made (because the geographic attributes of the spectrum are the same for all comparisons and can therefore be ignored). As soon as you try to compare the metric “customers per MHz” across different licence areas, the data loses its comparability. For example, just because an operator has 40 MHz serving a million subscribers in Vancouver, does not mean it is inefficient serving 100 thousand subscribers in Kelowna with 40 MHz. Nor does it mean that the carrier is inefficient in Vancouver, because an operator in LA serves 3 million subscribers with 40 MHz. MHz measure spectrum depth which is only one dimension of spectrum quantity. We need to include the geographic dimension of spectrum quantity to make comparisons across different serving areas.

³⁹ This is a prime failure of the Seaboard Group report – *Over the Rainbow: Thoughts on the 700 MHz Discussion*, February 2011. Seaboard’s main figure elevated to the report’s executive summary, erroneously attempts to compare Canadian and US spectrum utilization using a customers per MHz metric.

⁴⁰ For consistent comparability, we do not, as many submissions have, pick and choose different bands to include on a chart by chart basis.

⁴¹ We include all bands allocated to show the spectrum landscape today, pre auction. We provide information granularity by identifying cellular 850 and BRS spectrum on most charts. When we look at operator spectrum utilization in the next section, we include all bands allocated so as to include all spectrum capacity (in use or otherwise) at an operator’s disposal.

- b. Just like Industry Canada we do not include ESMR spectrum. This is a simple decision for Industry Canada.
 - i. ESMR is comprised of narrowband 25 kilohertz x 2 channels.
 - ii. ESMR is predominantly public safety spectrum in Canada.
 - iii. ESMR is licenced on a sector by sector basis per site not via vast blanket mobile spectrum licences.
 - iv. TELUS' channels are totally fragmented and only support an agile narrowband commercial service.⁴²
 - v. TELUS' myriad sector licences when aggregated represent far less than 10 MHz of spectrum depth on average nationally and at peak in any given sector⁴³
- c. We use a logical approach to account for the impact of network access agreements where the operators involved compete⁴⁴ for customers at the retail level: spectrum is allocated to the parties involved.
 - i. Reciprocal network access arrangements between operators do not magically create any new spectrum beyond what those operators bring individually. This is a critical point given entrants' suggestions that where operators compete at the retail level but allow reciprocal access to networks operating on certain spectrum they should be treated as one entity in auctions of spectrum unrelated to such access arrangements. Entrants contend this even though only one operator holds each spectrum licence and any capacity one operator gains through access to another operator's network is offset by the capacity lost by providing access to another operator.

⁴² Such fragmentation, coupled with limited channel count in any given sector, means that TELUS' ESMR assets are not broadband assets. Rogers in its submission alluded to a Sprint work item at 3GPP but this does not pertain to the same band as TELUS' ESMR holdings.

⁴³ In a perfect example of Seaboard's lack of due diligence and lack of industry knowledge, they document (in the Seaboard Group report – *Over the Rainbow: Thoughts on the 700 MHz Discussion*, February 2011 in Exhibit 3) TELUS holding 30 MHz of ESMR nationally!

⁴⁴ Clearly if two operators legally merged (subject to any remedies required by a competition review) and ceased competing with each other at the retail level then their spectrum depth per market should be summed. This is not at all the case with TELUS and Bell and the Seaboard characterization of "Bellus" clearly misrepresents the actual nature of current arrangements.

- ii. To determine how to allocate spectrum to operators competing with each other, we could leave each with what they brought in, simply split it down the middle, or calculate a weighted average, weighted by the customers being loaded by each carrier. It certainly makes no sense to sum the spectrum and then allocate the full amount to all operators involved in the reciprocal network access arrangement⁴⁵.
- iii. We note that for comparative purposes, in the case of 2500 MHz, Bell and Rogers actually jointly hold circa 130 MHz through Inukshuk and Industry Canada in its description of operator spectrum holdings in its SMSE-018-10 consultation allocated half of the Inukshuk spectrum to each party in their their 2500 MHz spectrum depth⁴⁶ and quantity⁴⁷. This is essentially the answer you would get using any of the three allocation methods above. They are joint owners so they each bring 50%. A split down the middle gives 50% and a weighted average gives 50% given that neither has any mobile customers on this spectrum.
- iv. When we consider (in Table 1⁴⁸ below) how to allocate 850 and PCS spectrum between TELUS and Bell who have a network access agreement using such spectrum, we get similar results employing each allocation method. TELUS brings an average national spectrum depth⁴⁹ of 40 MHz of cellular 850 and PCS spectrum combined. On a split down the middle TELUS would be allocated 41.5 MHz and using a customer weighted average, TELUS would be allocated 40.7 MHz⁵⁰.

⁴⁵ However, in their lack of wisdom, this is exactly what Seaboard Group did in their report – *Over the Rainbow: Thoughts on the 700 MHz Discussion*, February 2011.

⁴⁶ Industry Canada presented spectrum depth in MHz by Region.

⁴⁷ Industry Canada presented spectrum quantity in % Share of MHz-pops via pie charts.

⁴⁸ Sources: Industry Canada; Nordicity Research.

⁴⁹ As an example, the average national spectrum depth of TELUS' 25 MHz of 850 MHz spectrum in BC and Alberta, on a population weighted basis is equivalent to 6 MHz nationally.

⁵⁰ The supporting text for Seaboard Group – *Over the Rainbow: Thoughts on the 700 MHz Discussion*, February 2011 Figure 5 erroneously allocates 175 MHz to TELUS (a 3x overstatement) by suggesting all of Bell and TELUS' combined spectrum, including all of the 2500 MHz that Bell owns via its Inukshuk JV with Rogers, is somehow attributable to TELUS.

Table 1 – Operator National Average Spectrum Depth (MHz) with Network Access Agreement

Band	TELUS	Bell	Total	Simple Average	Weighted Average
850	6 MHz	17 MHz	23 MHz	11.5 MHz	11.3 / 11.7
PCS	34	26	60	30	29.4 / 30.6
850+PCS	40	43	83	41.5	40.7 / 42.3
AWS	16	13	29	Not Applicable ⁵¹	Not Applicable
2500	0	53	53	Not Applicable ⁵²	Not Applicable
Total	56	109	165 ⁵³	Not Applicable ⁵⁴	Not Applicable

- v. As a final note on the treatment of network access agreements in allocating spectrum for the purpose of comparing spectrum depths in a market, it is comforting to realize that the allocation is not critical if we are concerned with utilization and spectrum need. When we calculate spectrum utilization, we can determine a utilization level based on combined customers over combined spectrum, without looking at one carrier’s customers over its allocation of spectrum. Not surprisingly, in any actual reciprocal access arrangements, all the allocation methods as well as the combined view generate similar results – that’s why the arrangements work. In other words, when we consider the all important metric, spectrum utilization, how we consider spectrum depth where network access agreements are involved is basically irrelevant (despite the false alarms raised in many of the AWS entrant submissions, spurred on by inaccurate analysis out of the Seaboard Group).

68. We now present comparisons of spectrum depth over four geographic scales: nationally; regionally within Canada; across North America; and across North America and Europe.

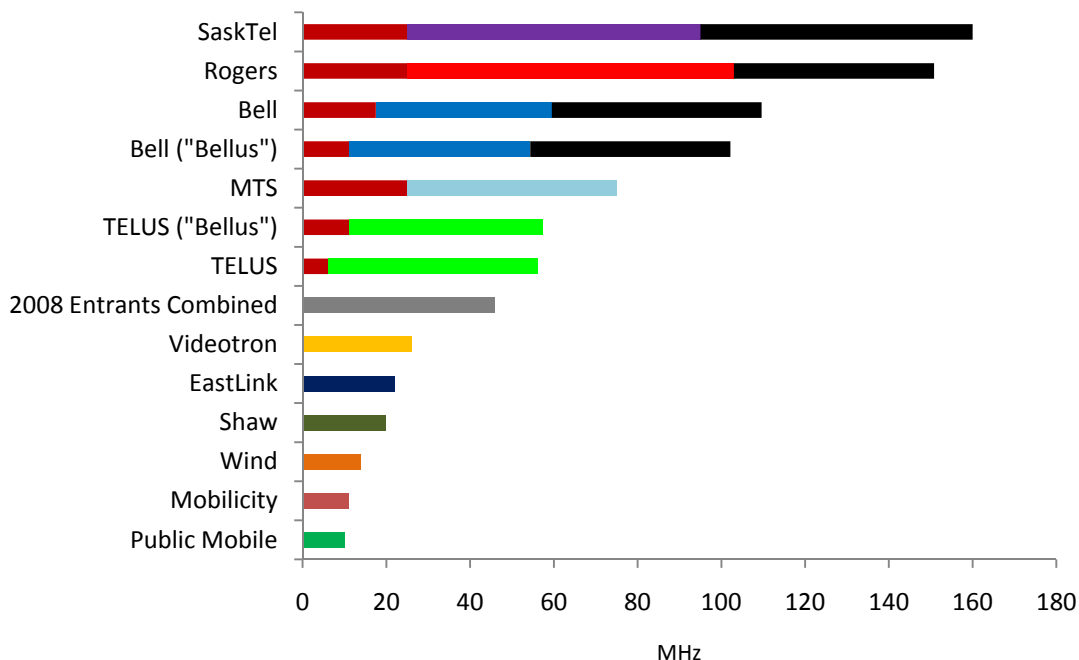
⁵¹ AWS spectrum is not part of any TELUS network access agreement with Bell.

⁵² Bell has a stake in a JV with Rogers that holds 2500 MHz spectrum. This 2500 MHz spectrum is not part of any TELUS network access agreement with Bell.

⁵³ Based on footnotes 51 and 52 above, The 175 MHz that Seaboard reports as TELUS’ spectrum depth (and despite the accompanying Figure 5 appearing to show TELUS at just under 160 MHz) because of a “mythical beast called Bellus” is erroneous.

⁵⁴ Clearly, based on footnotes 51 and 52 above, total spectrum across both parties is not applicable as a metric of TELUS spectrum depth.

Figure 3 – Average Spectrum Depth (MHz) by Operator across Licenced Territory in Canada



69. The above figure⁵⁵ represents the average spectrum depth in MHz held by the various operators in Canada across their licenced territory. The dark red bars represent average 850 MHz spectrum depth. The black bars represent average 2500 MHz spectrum depth. The chart also illustrates the effect of the TELUS Bell network access agreement across 850 MHz and PCS spectrum. We extract the following takeaways from the chart.
- a. If entrant consolidation⁵⁶ materializes, it is possible to achieve a similar spectrum depth to TELUS' current depth, which supports advanced mobile services to seven million mobile customers.
 - b. If one considers the impact of Bell and TELUS' network access agreement⁵⁷ with respect to 850 MHz and PCS spectrum, there is no material impact to what spectrum each carrier holds individually. Innovative ways to better serve customers and streamline operating and capital expense do not actually "create"

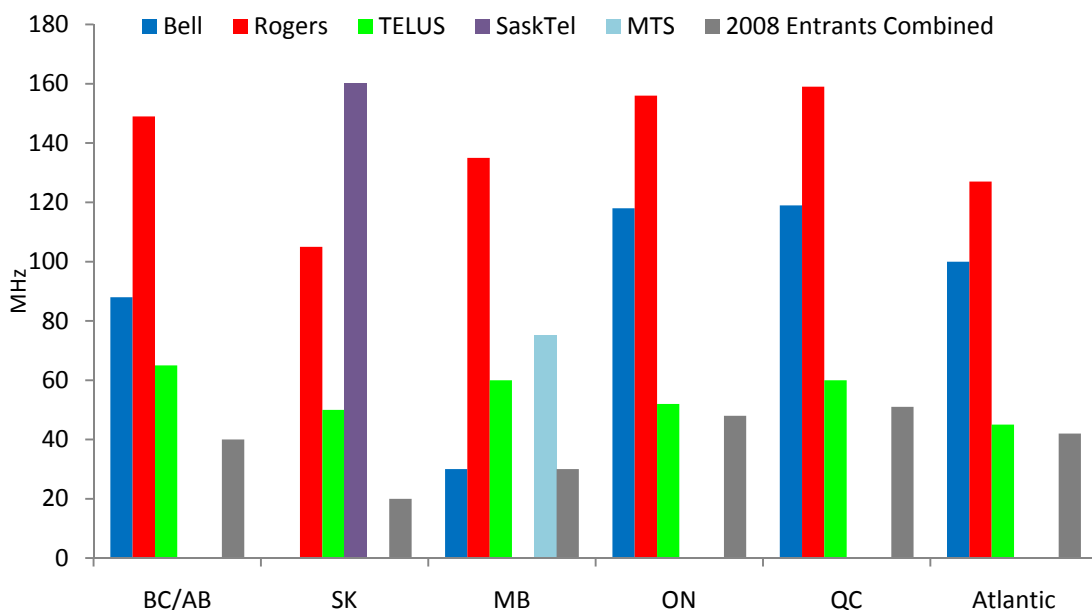
⁵⁵ Source: Industry Canada; Nordicity Research

⁵⁶ 2008 Entrants Combined represents Wind, Mobilicity, Public Mobile, Videotron, Shaw and EastLink but not SaskTel or MTS.

⁵⁷ Figure 2 visually portrays a split down the middle allocation from the Table 1 above. Note that TELUS and Bell's network access agreement results in expanded territory for Bell (e.g., Manitoba and Saskatchewan) and so Bell's average depth drops marginally as average spectrum depth is population weighted. Source: Nordicity Research

spectrum or new capacity but merely provide incremental efficiencies⁵⁸ – innovations that benefit the parties and their customers.

Figure 4 – Average Spectrum Depth (MHz) by Operator by Region (Entrants Grouped)



Rank	BC/AB	SK	MB	ON	QC	Atlantic
#1	Rogers	SaskTel	Rogers	Rogers	Rogers	Rogers
#2	Bell	Rogers	MTS	Bell	Bell	Bell
#3	TELUS	TELUS	TELUS	TELUS	TELUS	TELUS

70. The above figure⁵⁹ represents the spectrum depth held by the various operators in the main regions of Canada. The 2008 Entrants category only includes those operators that have already launched wireless service or have announced a pending launch⁶⁰. We extract the following takeaways from the chart.

- a. When we consider the holdings of Canadian operators on a regional basis which is how spectrum is generally allocated these days, we see that TELUS' spectrum depth is consistently below Bell and Rogers' but similar to the aggregate of the new entrants (which represents the potential of entrant consolidation.) TELUS is third in spectrum depth in every region of the country.

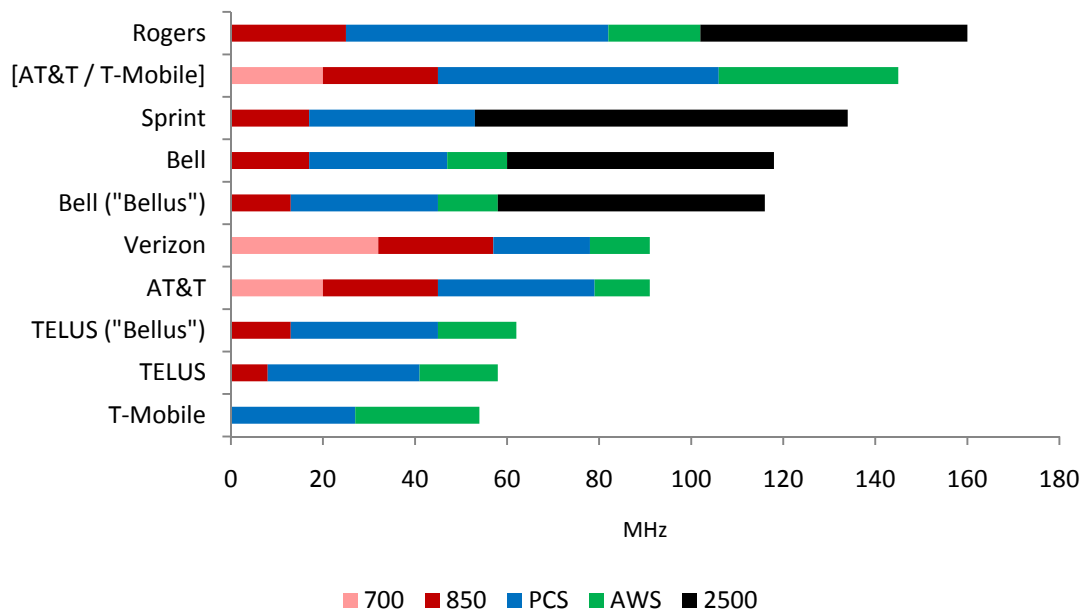
⁵⁸ See Nordicity Study filed by TELUS, Section 4.2, page 54, on ARPKm and need for efficiency for operators providing national service vs. operators providing top market service in Canada.

⁵⁹ Sources: Industry Canada; Nordicity Research.

⁶⁰ These are specifically Wind, Mobilicity, Public Mobile, Videotron and Shaw

- b. We also see that within Saskatchewan and Manitoba, regional operators SaskTel and MTS have dominant spectrum positions, although MTS, having no 2500 MHz spectrum in Manitoba, still trails Rogers.
- c. Rogers is the highest spectrum depth in every region in Canada except Saskatchewan.
- d. Bell has the second highest spectrum depth in every region in Canada except Saskatchewan and Manitoba.

Figure 5 – Canadian vs. US Spectrum Depth (Incumbent MHz in Major Markets)



71. The above figure⁶¹ represents the spectrum depth held by the top operators in North America. Sprint is shown here with 54% of Clearwire’s 2500 MHz spectrum, given Sprint’s 54% ownership of Clearwire. We extract the following takeaways from the chart.

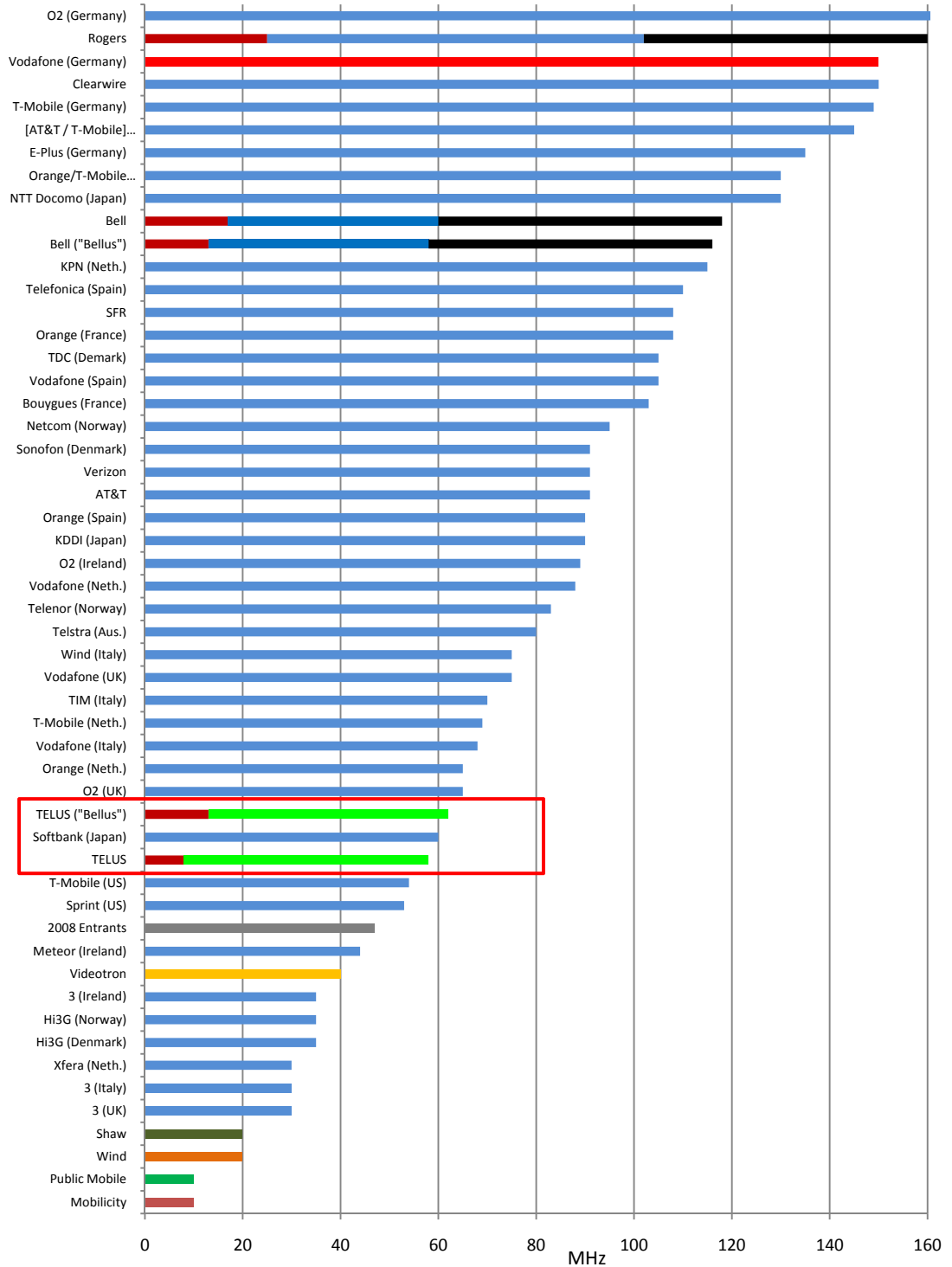
- a. TELUS and T-Mobile USA (pre-acquisition by AT&T) have less spectrum depth in major markets than all major incumbents in North America. (However, as we shall see in the next section, TELUS’ spectrum carries twice as many customers per MHz-pop as T-Mobile USA’s does.)
- b. Even when considering the impact of Bell and TELUS’ network access agreement as shown, TELUS still has less spectrum depth in major markets than all major

⁶¹ Sources: Industry Canada; FCC; Nordicity Research.

incumbents in North America except T-Mobile USA (pre-acquisition by AT&T). Post the AT&T acquisition of T-Mobile USA, TELUS would be the major North American operator with the least spectrum depth by a wide margin.

- c. As detailed in the Appendix, these results are in marked contrast to the erroneous analysis performed by the Seaboard Group and referenced by several AWS entrants in their submissions.

Figure 6 – International Comparison of Spectrum Depth (MHz in Major Markets)



72. The above figure⁶² represents the spectrum depth held by all mobile operators in Canada and select⁶³ operators in the U.S. and Europe. The data represents major markets. We extract the following takeaways from the chart.
- a. The chart visually confirms the data published by Industry Canada - that Rogers holds 41% of the allocated spectrum in Canada, Bell 29%, TELUS 15% and the main AWS entrants hold 13% in aggregate.
 - b. The impact of Bell and TELUS' network access agreement over 850 and PCS spectrum on spectrum depth is not material because TELUS and Bell bring generally the same amount of spectrum (although the 850 MHz is complementary) to the partnership.
 - c. Rogers is a global leader in spectrum depth based on this sampling of operators and Bell is in the top quartile of spectrum depth.
 - d. Entrant consolidation, which we suggest is likely in the near term given the pressures to achieve scale and the limited time window on favourable consolidation rules, would have the effect of bringing the consolidated entrants above many global benchmarks and nearly up to the depth of TELUS (while supporting a mere fraction of the customer base).
73. In summary, market to market comparisons of spectrum depth in MHz are a good general comparator of operator capacity in a market and the data clearly shows that TELUS is far behind incumbents on a regional, national or international comparison basis and that TELUS has comparable spectrum depth to the main AWS entrants aggregated. A heavy handed cap or set aside would be counterproductive for Canada and TELUS recommends that it be allowed to bid on at least two blocks of 700 MHz spectrum nationally.
74. Spectrum utilization, reviewed in the following section, is the key data for the government to consider in setting policy and the data supports TELUS' requirement to be able to bid on at least two blocks of 700 MHz nationally.

⁶² Sources: Industry Canada; FCC; Merrill Lynch; Nordicity Research.

⁶³ Figure 5 above is an update of Exhibit 6 (Comparative Spectral Holdings, International Markets – Canada by Major Markets 1Q2010 in the Seaboard Report: *Over the Rainbow: Thoughts on the 700 MHz Discussion 2011*), to reflect operator holdings more accurately. The Exhibit has been adjusted to reflect more accurately spectrum holdings of companies included in the analysis (all commercial mobile spectrum holdings vs. selective holdings) in addition to the inclusion of the spectrum holdings of the following operators: E-Plus (Germany), Orange/T-Mobile (UK Combined), Telefonica (Spain), TDC (Denmark), Vodafone (Spain), Netcom (Norway), Sonofon (Denmark), Orange (Spain), O2 (Ireland), Vodafone (Netherlands), Telenor (Norway), Wind (Italy), T-Mobile (Netherlands), Meteor (Ireland) 3 (Ireland), Hi3G (Norway), Hi3G (Denmark), Xfera (Netherlands).

The adequacy of spectrum per carrier has to be measured relative to the number of subscribers that such spectrum serves and not simply the total amount of spectrum held by a carrier

75. In the last section we set right the misinformation around spectrum depth submitted to the Department as part of the consultation. In this section we demonstrate how TELUS is the most undersupplied carrier relative to both other incumbents and entrants based on the simple normalized utilization metric of the ratio of mobile customers to spectrum quantity.
76. The point to be made in this section – that TELUS is the most undersupplied carrier relative to both other incumbents and entrants can be expressed in its simplest form:
- a. TELUS has a similar customer count to Bell but only half the spectrum.
 - b. TELUS has 22% less customers than Rogers but 63% less spectrum.
 - c. TELUS currently has more than ten times (and at the time of the auction(s) in 2012 is forecasted to still have almost four times) the customers of the entrants combined, but TELUS only has roughly the same amount of spectrum as the entrants combined.

When you look at entrant utilization to 2015, in aggregate and individually, the story stays the same: (i) TELUS' spectrum will still support almost twice the customers of the entrants combined and still more customers per unit of spectrum than any entrant individually and as such be under higher stress; and (ii) even into the future when the utilization ratios of select entrant approach the utilization ratio of TELUS, detailed analysis shows that entrants still would only need a fraction of the spectrum quantity TELUS would to address capacity shortfalls. As a result, from the perspective of relative ability to serve demand, current or projected, TELUS requires access to bid on 700 MHz spectrum more than any other carrier in Canada to meet the demand of its customer base and to continue to be a strong competitive alternative to both Rogers and Bell nationally and the regional incumbents.

In TELUS' view it makes no sense from the perspective of increasing competitive intensity if the outcome of a set aside or a cap is to benefit entrants by disadvantaging TELUS. That would only result in diminishing the competitive inroads TELUS has made over the past decade and weaken the competitiveness of the market overall.

77. Spectrum utilization measures are the core data needed by the Department to inform policy because utilization is a proxy for need - the logic being that an operator whose spectrum is relatively heavily utilized has a relatively higher need for additional spectrum at auction given the surging growth in demand. Conversely, an operator whose spectrum is relatively underutilized has a relatively lower need for additional spectrum at auction.
78. Once again, spectrum depth in MHz is a good general comparator of operator capacity in a market but if one is looking to consider spectrum utilization, spectrum depth is not the right parameter to be used as a denominator in spectrum utilization metrics⁶⁴. Spectrum depth is an incomplete denominator⁶⁵. Average spectrum depth is only one dimension of spectrum quantity. For utilization metrics, one needs to use the spectrum quantity in MHz-pops as the denominator⁶⁶.
79. The most straight forward and accessible indicator metric of spectrum utilization is measured as customers per spectrum quantity (i.e., customers per MHz-pop). Such a metric is normalized and reasonably comparable across any two licence areas as a general comparator. This simple utilization metric can also be looked at over time to account for forecasted market share shifts.
80. This metric is simple, accessible and indeed favourable to wireless entrants because:
 - a. It ignores differences between operators in terms of data usage per customer⁶⁷, which would only further favour operators like TELUS which have a customer base with a relatively high proportion⁶⁸ of smartphone, Internet sticks and tablets as well as a relatively high portion of business users. The analysis assumes that every customer from every operator uses the same average amount of spectrum. As such the growth over time in the average usage per user is also assumed to be the same for all operators.

⁶⁴ Such a metric (customers per MHz) is meaningless except and only in the case where a comparison of the exact same spectrum licence areas is being made.

⁶⁵ This is a prime failure of the Seaboard Group report – *Over the Rainbow: Thoughts on the 700 MHz Discussion*, February 2011. The first and only figure elevated to the report’s executive summary, erroneously attempts to compare Canadian and US spectrum utilization using a customers per MHz metric.

⁶⁶ The customers per MHz-pop metric include the geographic dimension of spectrum quantity to make comparisons across different serving areas.

⁶⁷ We only use this metric to compare Canadian operators and North American operators. Comparisons with Europe could be problematic due to various market differences such as much higher North American minutes of use and mobile data use vs. Europe, prevalence of multiple SIM cards in Europe, Calling Party Pays pricing structure, etc.

⁶⁸ Entrants’ subscribers are typically less smartphone focused (none yet sell the data usage leading iPhone device) and as such the impact of explosive data growth is asymmetrically borne with incumbents disproportionately burdened. Attempting to factor this in would be beneficial to TELUS as compared to entrants but the analysis in these reply comments does not factor it in.

- b. It ignores whether all of an operators' spectrum holdings are in use or not. All of an operator's mobile spectrum holdings are included. An operator that claims to have high utilization but is not using all of its spectrum will display lower utilization when measured across all its holdings.
- c. It ignores the specific bands that an operator holds. The fact that certain bands have better economics for certain applications and attract commensurate prices notwithstanding, from a capacity standpoint, a MHz is a MHz⁶⁹. But the results of the analysis do shed light on the policy issue of how to best allocate 700 MHz spectrum.
- d. It ignores the efficiency measures that an operator may or may not be implementing. It holds all operators to the same requirement to efficiently use their spectrum.
- e. It ignores variations in both the terrain over which service must be provided and customer density within an operator's licence areas⁷⁰. This is a reasonable assumption for a first order indicator metric when comparing different geographies. This assumption becomes irrelevant when comparing operators in the same geographies.
- f. The metric is accessible because licence information (i.e. MHz and pops covered) is generally public and subscriber counts are generally available - reported directly by public corporations and estimated by analysts for private corporations.
- g. So the metric does not require proprietary information about average data usage per sub, customer densities, service area terrain, specific bands or what exact spectrum an operator is using and not using, and what efficiency measures they have taken, etc. In the end, as a general indicator, it provides an accurate reflection of general new spectrum need on a simple capacity basis.

81. We look at the key metric of spectrum utilization in detail across many jurisdictions with a focus on North America. We take a close look at how it is forecasted to change over the next four years with views at 2010, 2012 and 2015 assuming no operator acquires any

⁶⁹ Seaboard seems to believe that a MHz of high band carries a higher bit/Hz load when instead they are actually referring to the fact that the 2500 MHz band by virtue of being 190 MHz wide, carries a lot of data.

⁷⁰ The analysis assumes that the population within a licence area is evenly distributed over the licence area and therefore ignores both the problems of capacity bottlenecks and the cost efficiencies of evenly dispersed customers. The analysis assumes that the terrain is the same for each operator being compared and therefore ignores the both problems of mountainous terrain and the cost efficiencies of delivering service over large flat regions. These assumptions are irrelevant when comparing operators within the same geography.

more spectrum (i.e., we consider YE2012 and YE2015 absent the outcome of the 700 and 2500 MHz auctions in order to develop a view of medium term need.)⁷¹

82. In the following paragraphs we show:

- a. how much total spectrum Canadian, and for reference purposes top U.S., operators have;
- b. how many customers these operators serve as at year end 2010 and are forecasted to serve as at year ends 2012 and 2015;
- c. the spectrum utilization levels of these operators at year ends 2010, 2012 and 2015 in time in terms of customers per MHz-pop⁷² based on the data in (a) and (b) above; and
- d. the spectrum quantity each would need⁷³ (in terms of total MHz-pops and also average MHz spectrum depth across their current spectrum coverage footprint) in order to have at year end 2015 an equivalent utilization level to Canadian industry spectrum leader, Rogers⁷⁴, based on the data in (a) and (c) above.

⁷¹ We look at normalized utilization based on analyst forecasts of North American subscribers to 2015 and the impact on relative utilization by operator.

⁷² These are views of spectrum utilization at year end 2015 before accounting for how Canadian operators will benefit from the upcoming 700 and 2500 MHz auction(s) in Canada. Note: The data is shown in customers per 10,000 MHz-pops to provide easy to work with numbers (as opposed to customers per MHz-pop).

⁷³ For the Canadian operators, this need is addressed by the upcoming 700 MHz and 2500 MHz auctions. For U.S. operators the FCC has already highlighted a need for 275 more MHz by 2014.

⁷⁴ We use Rogers as a benchmark because Rogers represents a global high water mark in spectrum holdings and Rogers is the spectrum leader in Canada and thus the customers per MHz-pop that Rogers might face at year end 2015 (i.e., 24.0 in 2015), without considering any additional spectrum Rogers might acquire at the upcoming auction(s) represents a reasonable goal for the balance of operators in Canada.

83. Table 2⁷⁵ below shows the total spectrum quantity in MHz-pops of Canadian and several top U.S. operators⁷⁶. It also shows the results of the potential AT&T / T-Mobile USA merger as well as the potential result of entrant consolidation⁷⁷ in Canada.

Table 2 – Operator Spectrum Quantity in MHz-pops as at Year End 2010

Operator	a. Spectrum Quantity in MHz-pops (M)
[AT&T / T-Mobile]	40,973
Sprint	31,538
Verizon	26,282
AT&T	24,412
T-Mobile	16,561
Rogers	4,517
Bell	3,091
TELUS	1,692
2008 Entrants Combined	1,359
Videotron	381
Wind	330
Shaw	188
Public Mobile	177
Mobilicity	175
SaskTel	156
EastLink	108
MTS	84

⁷⁵ Sources for spectrum holdings per operator in MHz-pops: Nordicity research based on Industry Canada and FCC websites.

⁷⁶ Top U.S. operators are shown for comparison but grayed out to highlight Canadian data.

⁷⁷ The entry “2008 Entrants Combined” is simply an illustrative construct which includes Videotron, Shaw, Eastlink, Wind, Public Mobile and Mobilicity (but not SaskTel or MTS).

84. Table 3 below shows reported and estimated subscriber counts for yearend 2010 and analyst projections⁷⁸ for subscriber counts at year ends 2012 and 2015.

Table 3 – Subscribers per Operator, current and projected

Operator	b. Subscribers ('000s)		
	2010	2012	2015
[AT&T / T-Mobile]	128,652	138,700	154,500
Verizon	94,845	118,650	129,549
AT&T	94,827	103,000	116,000
Sprint	48,370	49,000	51,500
T-Mobile	33,825	35,700	38,500
Rogers	8,978	9,888	10,838
Bell	7,242	7,847	8,597
TELUS	6,971	7,681	8,451
2008 Entrants Combined	518	2,148	4,732
Wind	229	798	1,336
Videotron	139	487	1,112
Mobilicity	100	517	825
Shaw	-	63	722
SaskTel	564	587	601
MTS	484	506	520
EastLink	-	33	377
Public Mobile	50	250	360

⁷⁸ Source for Canadian subscriber forecasts per operator: TD Newcrest Canadian Wireless Industry Report, Feb 17th 2011 except for Eastlink and Public Mobile which are a combination of TD Newcrest and TELUS estimates. Source for U.S. subscriber forecasts per operator: Frost & Sullivan, 2010 North American Consumer Mobile Communications Outlook N783-65, June, 2010.

85. Dividing subscribers by spectrum quantity gives us spectrum utilization which is a proxy for new spectrum need. This is simply current and projected subscribers divided by current spectrum holdings to give a basic measure of spectrum utilization per operator over time. The results are shown in Table 4 below and we see that some operators move up or down in the rankings over time based on the number of subscribers analysts forecast they will serve at year ends 2012 and 2015.

Table 4 –Subscribers/10,000 MHz-pops, current and projected

Operator	c. Spectrum Utilization Ratio (Subscribers per 10,000 MHz-pops)						
	2010		Operator	2012		Operator	2015
MTS	57.6		MTS	60.2		MTS	61.9
TELUS	41.2		TELUS	45.4		TELUS	49.9
AT&T	38.8		Verizon	45.1		Verizon	49.3
SaskTel	36.2		AT&T	42.2		AT&T	47.5
Verizon	36.1		SaskTel	37.6		Mobilicity	47.1
[AT&T / T-Mobile]	31.4		[AT&T / T-Mobile]	33.9		Wind	40.5
Bell	23.4		Mobilicity	29.5		SaskTel	38.5
T-Mobile	20.4		Bell	25.4		Shaw	38.4
Rogers	19.9		Wind	24.2		[AT&T / T-Mobile]	37.7
Sprint	15.3		Rogers	21.9		EastLink	34.9
Wind	6.9		T-Mobile	21.6		2008 Entrants	34.8
Mobilicity	5.7		2008 Entrants	15.8		Videotron	29.2
2008 Entrants	3.8		Sprint	15.5		Bell	27.8
Videotron	3.6		Public Mobile	14.1		Rogers	24.0
Public Mobile	2.8		Videotron	12.8		T-Mobile	23.2
Shaw	0.0		Shaw	3.4		Public Mobile	20.3
EastLink	0.0		EastLink	3.0		Sprint	16.3

86. From this data, the spectrum quantity each operator would need⁷⁹ (in terms of total MHz-pops and also average MHz spectrum depth across their current spectrum coverage footprint) in order to have at year end 2015 an equivalent utilization level to Canadian industry spectrum leader, Rogers⁸⁰ can be simply derived⁸¹ and is shown in the next table.

⁷⁹ For the Canadian operators, this need is addressed by the upcoming 700 MHz and 2500 MHz auctions. For U.S. operators the FCC has already highlighted a need for 275 more MHz by 2014.

⁸⁰ We use Rogers as a benchmark because Rogers represents a global high water mark in spectrum holdings and Rogers is the spectrum leader in Canada and thus the customers per MHz-pop that Rogers might face at year end

87. Table 5 below indicates how much additional spectrum each operator would need (both in terms of total MHz-pops and in terms of average spectrum depth across their existing spectrum footprints in MHz) in order to achieve at year end 2015 the same spectrum utilization ratio as Canadian spectrum leader Rogers (i.e, 24 customers per 10,000 MHz-pops). This table does not suggest that Rogers does not need additional spectrum, but simply how much each other operator would need to catch up to Rogers on a subscriber per MHz-pop basis.

Table 5 – Year End 2015 Spectrum Need, quantity and average depth across spectrum footprint

Operator	d. Year End 2015 Spectrum Need to achieve Rogers' Utilization	
	Quantity Needed (millions of MHz-pops)	Average Depth Needed across spectrum footprint (MHz)
Verizon	27,711	97
AT&T	23,934	84
[AT&T / T-Mobile]	23,419	82
TELUS	1830	61
2008 Entrants Combined	613	20
Bell	492	18
Wind	227	10
Mobilicity	169	10
MTS	133	119
Shaw	113	12
SaskTel	94	97
Videotron	82	6
EastLink	49	10
Rogers	0	0
Public Mobile	-27	-2
T-Mobile	-515	-2
Sprint	-10,074	-35

2015 (i.e., 24.0 in 2015), without considering any additional spectrum Rogers might acquire at the upcoming auction(s) represents a reasonable goal for the balance of operators in Canada.

⁸¹ Year end 2015 spectrum need in MHz-pops is simply the additional MHz-pops required such that 2015 subscribers divided by the sum of existing and new spectrum quantity (in MHz-pops) equals 24 per 10,000 MHz-pops (the Rogers equivalent). Average MHz across spectrum footprint is simply the additional MHz-pops divided by the unique pops within an operator's spectrum footprint. TELUS detailed unique pops per operator (on a national percentage basis in its original submission in Table 5 on page 62.

88. It is interesting to note that adding up all the spectrum need for Canadian operators as at year end 2015 (based on achieving an equivalent spectrum utilization ratio to Rogers) only 3.2 billion MHz-pops of the 4.8⁸² billion MHz-pops of 700 MHz and 2500 MHz earmarked for auction is required for all operators in Canada to have an equivalent spectrum utilization ratio as industry spectrum leader Rogers and this includes subscriber growth forecasted through 2015.
89. From Table 5 above it is clear which operators are most in need of additional spectrum to meet current and forecasted demand how much spectrum they need. This should provide clear evidence to Industry Canada from which to guide their policy making decisions with respect to the 700 MHz and 2500 MHz auctions. In particular, we see that:
- a. TELUS must more than double its spectrum holdings (i.e., add 1830 million MHz-pops to its existing 1692 million MHz-pops) in order to achieve the utilization ratio of Rogers as at year end 2015. This is equivalent to TELUS acquiring over 60 MHz nationally at auction. This need is based on the fact that TELUS has the highest ratio of customers to spectrum quantity (in MHz-pops) of any carrier through 2015, either incumbent or entrant, other than MTS within its Manitoba operating territory.
 - b. MTS and SaskTel, both only providing wireless service in their home provinces, and where they have dominant market shares would need significant more spectrum in order to achieve the utilization ratio of Rogers at 2015. There are reasons to believe that the analysis may overstate their need. While most operators compared are operating over or have spectrum covering somewhat similar territories or subsets thereof, MTS and SaskTel operate in provinces with more evenly dispersed customers which reduces strain on spectrum resources and they operate over large flat terrain which simplifies network densification to address capacity shortages.
 - c. The two entrants with the most spectrum need at year end 2015 according to industry subscriber forecasts are Mobilicity and Wind. However, tellingly, to achieve the same utilization ratio as Canadian industry spectrum leader Rogers, both of these operators require only 10 MHz (of 700 MHz and/or 2500 MHz spectrum) across their current spectrum footprints. This is clear evidence that

⁸² 4.8 billion MHz-pops is based on 70 MHz of commercial 700 MHz spectrum (i.e., it excludes the upper D block) and the roughly 2.75 billion MHz-pops of 2500 MHz spectrum leftovers to be auctioned.

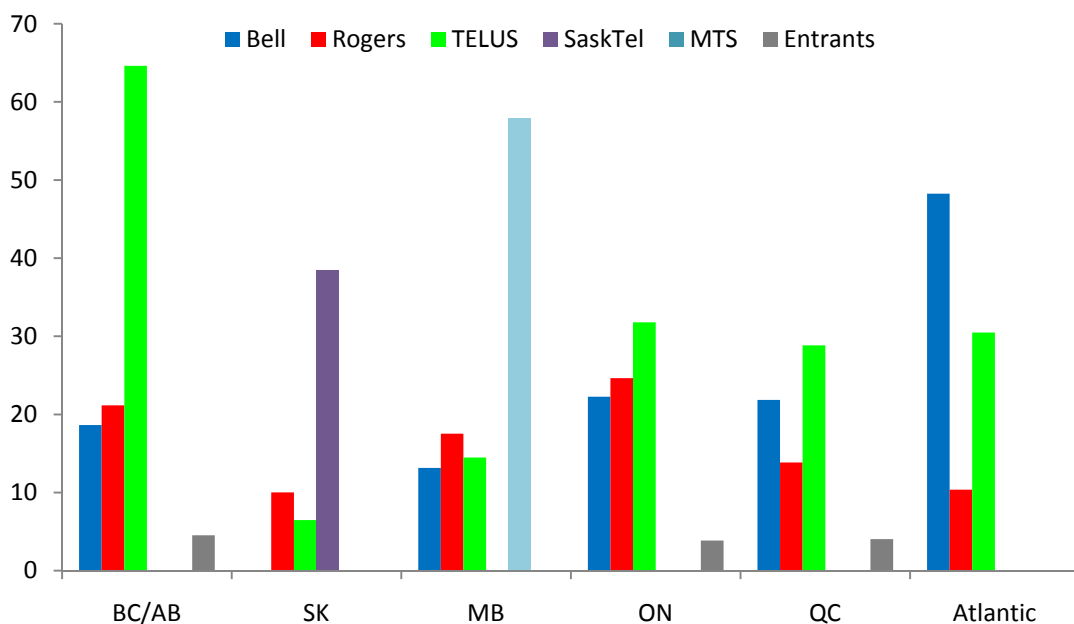
the proposition floated by these operators that all 700 MHz spectrum be set aside for entrants is completely unfounded.

- d. Public Mobile is forecasted to have more spectrum capacity on a customers per MHz-pop basis than Rogers through 2015.
- e. The entrants combined need only 20 more MHz nationally.

90. The logic of the spectrum utilization metric is simple and unassailable - simply put if carrier A has 5 times the spectrum of carrier B, but carrier A also has 20 times the number of customers, then carrier A actually has less capacity to serve its customers on an per customer basis than carrier B. Moreover in an environment where mobile data demand is growing exponentially and there is no additional spectrum available (pre-auction), carrier A is worse off than carrier B in serving that growth even though carrier A has 5 times as much spectrum.

91. For greater clarity we also provide a view of spectrum utilization (i.e., new spectrum need) at the regional level in Canada.

Figure 7 – 2010 Subscribers/10,000 MHz-pops per Canadian Region



92. Figure 7 above assesses spectrum utilization at the regional level in Canada as at year end 2010⁸³. We see that:
- a. TELUS is consistently in need of spectrum across the country with its greatest relative need in its ILEC territory of Alberta and BC where it was stripped of 20 MHz of PCS spectrum under the spectrum cap. TELUS has the highest need in every one of the four biggest provinces in Canada covering 85% of the population of Canada.
 - b. SaskTel and MTS require spectrum in their home provinces, MTS more than SaskTel due mainly to SaskTel's 2500 MHz spectrum. This is driven by the dominant (>>50%) market shares they hold. Perhaps MTS' recently announced arrangement with Rogers in Manitoba is evidence of this heavy utilization.
93. If, as all pure play entrants have suggested, their need for spectrum should result in a set aside, then logically spectrum should also be set aside for TELUS. TELUS is not proposing this but the data clearly substantiates that TELUS, at the very least, should be given the right to bid on a sufficient amount of spectrum. The data shows that even based on optimistic forecasts for entrant sub growth, entrants have more capacity to manage growth than TELUS through 2015⁸⁴.
94. The failure of entrants and Seaboard to accurately portray spectrum holdings and to accurately account for actual customers per MHz-pop provides a gross distortion of the relative spectrum position of TELUS to U.S. counterparts in their faulty comparisons. TELUS considers this oversight deliberate, because if subscribers per MHz-pop, which is the most appropriate metric, is used in the analysis of spectrum requirements, the entrants' support for a set aside from a spectrum needs perspective evaporates.
95. Entrants like to make arguments about the "Big 3" in order to attempt to market their positions but doing so hides a critical point, which is that TELUS has substantially less spectrum and substantially less spectrum per customer than the other national incumbents. This holds true even when considering that TELUS and Bell have a network access agreement.

⁸³ This is based on a regional allocation of reported and estimated subscribers per operator by Nordicity. While it would be interesting to look at this type of data at 2012 and 2015, such would be based on extensive estimation and hence has not been pursued in this document.

⁸⁴ Interestingly, many entrants suggest that TELUS has no need for spectrum through 2015. If these suppositions were to be believed, then this analysis would show that they then have no need for additional spectrum through 2015.

96. Throughout their submissions, the entrants refer to the Big 3 and lump them all together. While TELUS is a significant national operator based on both its national presence and national market share, when it comes to spectrum, there is actually only a Big 2 and this does not include TELUS. Tellingly, despite all the rhetoric about the Big 3 and their supposed spectrum hoarding, the data that Seaboard and the entrants provide only includes data on Bell, (inflated to represent in the words of Seaboard “the mythical Bellus”) and Rogers. TELUS data is always completely absent when the proof is being laid out by the wireless entrants seeking a set aside.
97. Based on the totally inaccurate and misleading analysis of the entrants, all entrants (other than Quebecor and Shaw) suggest that incumbent mobile operators including TELUS should be completely restricted from bidding on spectrum in the 700 MHz auction. Mobilicity goes as far as to proclaim that TELUS already holds sufficient spectrum to see it through to 2015 at least.
98. We have shown that based on industry analyst forecasts of subscribers per operator to 2015, of the circa 4.8 billion MHz-pops of commercial mobile spectrum to be auctioned⁸⁵ in 2012, only 3.2 billion MHz-pops would be required to balance operators through 2015, leaving 1.6 billion more MHz-pops to the highest bidders. Of this 3.2 billion MHz-pops, the analysis suggests that TELUS needs 1.9 billion MHz-pops. This is more than 20 MHz of 700 MHz and 40 MHz of 2500 spectrum nationally.
99. TELUS, despite being an entrant in three quarters of the country and having paid more for spectrum on average than any operator in Canada, is not asking the Department for advantaging.
100. All TELUS is asking the Department to do is not to deliberately disadvantage TELUS at auction by blocking TELUS from seeking the spectrum it demonstrably needs through a poorly designed cap or set aside. TELUS’ record of investment has earned TELUS the right to have the same opportunity to bid as the wireless entrants.
101. In this section we have clearly shown that from a relative perspective, TELUS requires spectrum more than other operators including the AWS entrants. In the next section, we show how TELUS is not only more in need of spectrum than other operators from a relative perspective, but that on an absolute basis, TELUS’ need is very real and pressing.

⁸⁵ 2.1 billion MHz-pops is 700 MHz spectrum (i.e., the lower 700 band and the upper 700 C block comprise 70 MHz gross of commercial mobile spectrum (although the net spectrum based on the proposed band plan and 3GPP band definitions is 60 MHz.) 2.7 billion MHz-pops is the clawback and leftovers auction of 2500 MHz spectrum from a total of 5.7 billion MHz-pops in the 2500 band.

There is no merit to the claims that TELUS has no spectrum scarcity and that TELUS is using spectrum inefficiently. Explosive growth in mobile data demand is challenging TELUS' networks and spectrum holdings

102. In the previous sections we have shown that TELUS is legitimately an entrant in most of Canada, given its investments and national expansion over the last decade and we have clearly laid out the strong case for TELUS' requirement for significant additional spectrum in comparison with all other operators in Canada.
103. In a confidential submission to Industry Canada as requested in Consultation SMSE-018-10, TELUS has provided the detailed justification from a network planning and operations perspective for significant additional spectrum based on current utilization, network stress points, specific efficiency measures, technology roadmap, etc.
104. In this section we provide further evidence on the public record to show how TELUS is not only more in need of spectrum than other operators from a relative perspective, but on an absolute basis as well.
105. TELUS is also compelled to address in this section of its reply comments to the Department, based on their prevalence, the sometimes outrageous claims made by the entrants with respect to their view of TELUS' spectrum need. Poorly constructed comparisons and various mischaracterizations abound. We will highlight some of the worst. In this section we address:
 - a. The false claim by Mobilicity and other entrants that TELUS is operating very inefficiently and that TELUS' 40 MHz of PCS spectrum in Toronto is enough to serve every operators' customers in Toronto based on Mobilicity's faulty un-normalized comparisons to US. markets.
 - b. The suspect conclusion of Mobilicity that the FCC OBI Spectrum Study when translated to the Canadian market, implies that TELUS has no new spectrum need until sometime beyond 2015.
 - c. The misrepresentation that TELUS is hoarding and warehousing spectrum.
106. Ironically, in their quest to dispel any notion of spectrum need for TELUS to support their calls for auction intervention, the entrants fail to see what that says about their own spectrum need. If as they claim, TELUS can easily serve over seven million mobile customers in today's mobile broadband paradigm with 56 MHz of spectrum depth on average nationally, then by that logic entrants in aggregate with 53 MHz of average spectrum depth in their operating territories have years to go (based on analyst

subscriber forecasts) before they truly need more spectrum. We accept that this proposition is absurd but simply note that is where such “logic” takes you.

107. Not surprisingly therefore, the entrants see eye to eye with incumbents when talking about the mobile data explosion and its effect on *their* (the entrants) spectrum needs.
108. There is an overwhelming consensus among experts and operators both in Canada and in other jurisdictions that with the shift from voice-centric to data-centric use of mobile networks to support smart devices and mobile broadband, there will be an explosive increase in the consumption of and demand for spectrum.
109. The loading profile on the new TELUS HSPA+ network has already demonstrated that there is an order of magnitude increase in data consumption per subscriber associated with the shift from feature phones to smartphones. This is readily apparent in the shift in usage from TELUS’ CDMA based device of 36 MBs per month on average to TELUS’ HSPA+ based smartphone that consumed on average over 220MBs per month in 2010, representing a six fold increase in demand.
110. This demand shift is well understood and accepted. In its evidence Bell noted that it has already seen a 20x growth in data consumption associated with smartphones. In its submission to Industry Canada, Nokia Siemens Networks (NSN) presented a forecast of global mobile data growth of 10,000%⁸⁶ over the next 5 years. Rysavvy in its report also made projections with respect to the rate of exponential growth, noting at page 7 that:

“There are a variety of statistics available about the growth of the mobile-broadband market. Cisco in its latest report on mobile-broadband growth projects an annual compound growth rate of 92% for mobile broadband for the next five years as shown in Figure 1.9 Cisco, in this same report, indicates that global mobile data traffic grew by a factor of 2.6 in 2010, nearly tripling for the third successive year. For 2011, Cisco’s estimate is for 131% growth in traffic.”
111. Whether actual data growth ends up being as high as projected, higher or even lower than predicted, no one contends that there will not be massive growth, especially given the growth seen over the last two years, as customers migrate to smart devices and Internet sticks. Such migration and use is still in the formative stages in Canada with most growth yet to occur. Even as TELUS is accelerating its program of cell site densification, the capacity gained will not be sufficient to keep up with rising demand. This is borne out by the statistics regarding the ratio of subscribers to spectrum quantity outlined in the previous section whereby TELUS’ capacity, more so than other operators, will be

⁸⁶ Refer to NSN submission page 4

insufficient to meet such growth in demand absent substantial additional spectrum holdings (via the 700 MHz and 2500 MHz auctions).

112. TELUS has activated substantially all of its 850 MHz and PCS carriers⁸⁷ in urban and key rural / remote markets to meet demand. As TELUS wins net additions and as more and more of TELUS' existing subscribers migrate from feature phones to smartphones (going from, on average, roughly 36 MB in monthly data usage to roughly 220 MB) the pressure on TELUS' network builds. Costly measures such as cell splitting and sectorization can only go so far to maintain service levels. TELUS' AWS spectrum (as discussed below) will help in the short term, but TELUS has a real and pressing need to acquire significant additional spectrum in the very near future.
113. We now turn to some of the more blatant mischaracterizations submitted to the Department. The pure play entrants spend much effort to attempt to show that TELUS and others have no spectrum need. Their analysis is unconvincing.
114. Mobilicity suggests that since AT&T serves customers in New York (that they surmise total more than the population of Toronto) with 55 MHz of cellular 850 and PCS spectrum and Canadian operators are not using their spectrum efficiently, that TELUS could serve the customers of all the operators in Toronto simply because TELUS has 40 MHz of PCS spectrum in Toronto.
 - a. Mobilicity attempts to compare New York to Toronto based solely on spectrum depth in MHz. Market to market comparisons of spectrum depth (i.e., MHz) are informative one needs to consider the two licence areas from which the subscriber counts are coming from⁸⁸. Two simple counterexamples can be used to show that subscribers per MHz is only valid for comparing operators in the exact same markets⁸⁹:
 - i. Example 1 – imagine that the same spectrum depth was allocated around the world. Using the Mobilicity (and Seaboard and other) examples, Mobilicity would say that the U.S. is more than 10 times more efficient than Canada because the U.S. has more than 10 times the subscribers. We have categorically shown that this not true in the previous section. In fact we showed that TELUS is the most efficient major incumbent operator in North America.

⁸⁷ "Carriers" is short for carrier frequencies.

⁸⁸ See paragraphs 67 - 72 previously.

- ii. Example 2 – imagine that the same spectrum depth was allocated around the world. Using the Mobilicity (and Seaboard and other) examples, Mobilicity would say that the rest of the world outside of North America is roughly 14 times more efficient than North America because rest of the world outside of North America has roughly 14 times the subscribers as North America. By extension, building on Example 1 above, Canada would be 140 times less efficient than the rest of the world outside North America. This is obviously not true and Mobilicity's and Seaboard's comparisons are misleading.
- b. To bolster their supposition that TELUS is not using spectrum efficiently, Mobilicity, Seaboard and others point to the fact that U.S. operators often use a six sector configuration. Sectorization and cell splitting are essentially the same engineering technique, but they address the locality of the traffic differently. Where voice traffic is often evenly distributed, data traffic locality is generally concentrated in certain "hot spots"⁹⁰. TELUS currently uses six sector configurations where warranted. To the extent that entrants have suggested that further sectorization is possible and suggested it is more prevalent in the U.S., the data traffic proximity and technical inefficiency⁹¹ of this technique warrants controlled deployment. Additionally, the lengthy sectorization planning process dilutes the effective capacity once sectors are commercially realized whenever the traffic pattern changes between the planning and implementation phases. TELUS has efficiently deployed its spectrum⁹² and TELUS' incremental spectrum requirements are captured in TELUS' confidential submission to Industry Canada.
 - c. Finally, TELUS notes that maximizing spectrum efficiency and hence utilization is a complex endeavour and while sectorization and cell splitting can be used to squeeze more capacity out of a given spectrum licence, the process is costly and has hard limits. Further, any efficiency measures that incumbents can take, can also be taken by entrants, and this points us back to measures of relative utilization as detailed in the previous section where we show that based on current spectrum holdings, TELUS will have to more efficiently use its spectrum than all entrants in order to serve its customer base.

⁹⁰ See Whitepaper "Analysis of Traffic Offload : WiFi to Rescue", Murat Bilgic, WirelessE2E LLC, September, 2010. http://trusted-advisor-mobile.com/Analysis_of_Traffic_Offload.html

⁹¹ Figure 9.20 , "LTE for UMTS – OFDMA and SC-FDMA Based Radio Access", Harri Holma and Antti Toskala, 2009

⁹² As validated via the Sub / MHz-pop metrics found earlier in this document.

115. Mobilicity provided an analysis of how to apply the FCC OBI Spectrum Study to Canada in an attempt to show that TELUS and others do not need any additional spectrum. The FCC study conservatively calls for 275⁹³ more MHz (beyond 700 MHz and 2500 MHz) to be allocated in the U.S. by 2014 to bring the total US allocation to 822 MHz. Mobilicity concludes that somehow Canada likely needs only circa 200 MHz allocated through 2014 (despite the fact that an average of 368 MHz has already been allocated in Canada and Canada will reach at least 530 MHz after the 700 and 2500 MHz auctions.) Here is Mobilicity's logic:

- a. The OBI study reports 547 MHz of commercial mobile spectrum allocated via year end 2008 in the US and assumes only 170 MHz was in use as of 2009. Of the 170 MHz in use, only 33% or 57MHz was assumed to be in use for data. Due to forecasted data usage growth offset by cell site growth and spectral efficiency gains, this 57 MHz grows to 708 MHz for data by 2014 and 822 MHz in total including voice. Mobilicity suggests⁹⁴ that the lowest data usage point from the FCC sensitivity analysis – a minus 30% adjustment to 40 MHz in use for data in the U.S. in 2009 – is the correct US baseline to adjust to Canada from. This minus 30% adjustment in the U.S. results in a 2014 need in the US of 3.6x 2009, not 4.8x 2009 levels and thus 612 MHz is needed in 2014 or only 65 MHz more vs. 275 MHz more by 2014 as the FCC believes in its base case.
- b. Mobilicity, leveraging its faulty comparison of Toronto and New York discussed above, then assumes that only 50 MHz are in use in Canada⁹⁵ for voice and data compared to the 170 MHz assumed in the US. (In other words, Mobilicity is suggesting something like TELUS, Bell and Rogers are utilizing, at the beginning of 2009, only 16.5 MHz each in Toronto for voice and data.) Using this fundamentally wrong assumption, Mobilicity concludes (reverting to the FCC standard 4.8x spectrum need from 2009 to 2014 as opposed to the 3.6x it previously stated was more suitable) that at the low end, Canada needs only 4.8 x 50 MHz or 240 MHz by 2014 (regardless of the fact that Industry Canada has already allocated 368 MHz to date).
- c. Mobilicity then arbitrarily selects a high end need figure for its range by first reasonably assuming Canada's need will be one year behind the US (ie, Canada's need in 2014 will equal the U.S. base case need in 2013 of 637 MHz) and then arbitrarily subtracting 122 MHz to get 515 MHz. This 122 MHz adjustment is

⁹³ This is 275 MHz on top of the 547 MHz already allocated in the U.S. as of YE2008.

⁹⁴ See Mobilicity submission paragraphs 46 and 50.

⁹⁵ We note that the Department has confidential operator submissions describing actual utilization from which this assumption can be debunked.

once again based on the wrong assumption that as of 2009, only 50 MHz was in use in Toronto but Mobilicity fails to apply a 2009 to 2014 multiplier to it. If Mobilicity did apply a multiplier as it should, then the need in Canada at the high end based even on Mobilicity's faulty logic would be the same 240 MHz Mobilicity came up with for a low end.

- d. Clearly, Mobilicity's analysis is internally inconsistent and predicated on assumptions that are not accurate. But two takeaways are worth recapping:
 - i. Mobilicity in its zeal to try to suggest that TELUS (and other established operators) need no spectrum, is inadvertently suggesting that Mobilicity needs no spectrum. For if somehow 50 MHz nationally can support Canada's 22 million customers at the start of 2009, then surely the 40 MHz of AWS set aside for entrants is enough to support the entrants relatively few urban customers for years to come. But of course every independent source would never accept this type of perspective.
 - ii. Mobilicity notes that, as highlighted in the FCC study, a trade off exists between spending on new spectrum and spending on site densification. What Mobilicity fails to acknowledge is that this trade off is just as applicable to entrants. Site densification to expand capacity is not a low band spectrum exercise. That is, down the road, if AWS entrants run into capacity constraints, site densification and/or any type of new spectrum (not particularly 700 MHz spectrum) are the answer for them.

116. TELUS refutes categorically the unsubstantiated assertions by many entrants that TELUS is hoarding spectrum that could otherwise be used to meet the explosive growth in demand for mobile data.

117. TELUS has commercial mobile spectrum in the 850 MHz, PCS and AWS bands and has utilized all of its limited 850 MHz spectrum and substantially⁹⁶ all of its PCS spectrum to operate both a CDMA and an HSPA+ network nationally serving seven million customers. Moreover, TELUS has further earmarked over \$100 million in 2011 alone for capacity expansion, cell splitting and sectorization to increase TELUS' capacity on 850 MHz and PCS spectrum as a supplement to deploying AWS spectrum. TELUS has already accounted for

⁹⁶ TELUS has not utilized all of its PCS spectrum in several secondary and tertiary markets as the Department is aware.

this supplemental capacity gain via cell splitting and sectorization in the confidential spectrum needs analysis submitted to the Department⁹⁷.

118. What also cannot be ignored is that the loading on TELUS' new HSPA+ network represents an exponential increase in demand per customer as a result of a shift to smartphone adoption. With 90% smartphone / Internet stick loading on TELUS' HSPA+ network, TELUS, as suggested by Huawei, now has perhaps the busiest network anywhere in the world. That is why Huawei is setting up an R&D lab in Canada to create made in Canada solutions to congestion for sale to global markets, because TELUS' network is already exhibiting the congestion problems that ultimately all major broadband wireless networks will face as the proportion of customers using smartphones, Internet sticks and tablets increases. The fact that the TELUS network already exhibits these characteristics is due to both the high proportion of broadband users and the fact our networks are leading edge when it comes to broadband adoption.
119. It is this type of leadership that TELUS has contributed to in Canada that causes us to take exception to the suggestion of warehousing, when in fact TELUS is the most spectrally efficient carrier in the country.
120. TELUS has also been criticized for not deploying its AWS spectrum to date. These attacks however ignore certain obvious truths.
 - a. Firstly, following the AWS auction, TELUS was in the midst of completely overlaying and upgrading its networks with HSPA+ and accordingly is now able to deliver world leading services to Canadians, 95% of them as at the end of 2010. Notably this investment was made in the midst of a deep recession, where TELUS actually increased CAPEX in the face of this recession even as other operators cut back.
 - b. Secondly, TELUS has always fully disclosed⁹⁸ its plans, as have presumably all incumbents in North America (e.g., Bell, Rogers, SaskTel, MTS, Verizon and AT&T), to use a combination of AWS and 700 MHz to roll out LTE. The fact that we have not rolled out AWS yet is due to both the absence of a North American ecosystem to date for LTE over AWS spectrum and the fact that Canada's 700

⁹⁷ TELUS refers the Department to TELUS' original confidential submission.

⁹⁸ "I think what is clear is that as it relates to 4G, we will be going LTE. And of course that was enabled by our securing of spectrum in the recent AWS auction." Darren Entwistle, Q2 2008 conference Call (August 8, 2008). "Complementing this initiative was our purchase of 59 spectrum licences across Canada in the advanced wireless services (AWS) spectrum auction, which will enable us to provide wireless data services to support the future growth of our business and facilitate our plans to move to LTE technology." 2008 Annual Report CEO Letter (March 2009).

MHz auction will be six years later than the U.S.'s final and most significant 700 MHz auction.

- c. In building out LTE over AWS spectrum, Canadian incumbents have always planned to follow and leverage the U.S. ecosystem. The development of the LTE over AWS ecosystem in Canada since AWS licences were issued at the start of 2009 has therefore been driven by U.S. operators⁹⁹.
- d. Rather than being hoarding, the acquisition of spectrum¹⁰⁰ (e.g., AWS) for next generation investments in the future (e.g., 2008 purchase of AWS spectrum for implementation of LTE in 2011) is a normal activity in the wireless industry, especially in an environment of rapidly growing demand.
- e. Hoarding AWS makes no sense according to economists when there is no foreclosure value as is the case with a 40 MHz AWS set aside. A public company like TELUS spending \$882 million on AWS spectrum to simply let it lie fallow would be impossible in today's corporate governance environment and there would be no shareholder appetite for such a strategy. TELUS notes that it will likely have deployed AWS spectrum with next generation technology before EastLink and Shaw have operationalized their AWS spectrum purchases and presumably with current generation technology

121. TELUS has effectively re-farmed spectrum from AMPS to CDMA in the 850 MHz band and now to HSPA, delicately balancing the network transitions of existing subscribers. TELUS has circa 7 million subscribers, many of whom reside in BC and Alberta, sharing a limited 25 MHz of 850 MHz spectrum and 20 MHz of PCS to reach 95% of the population. TELUS' key low band holdings can accommodate two HSPA+ carriers maximum, but only through further re-farming of all existing CDMA assets and turning down CDMA service. The migration of a CDMA subscriber to HSPA+ with on average six times more usage clearly exacerbates the problem of re-farming existing 850 MHz and PCS spectrum. The spectrum constraint is the same where TELUS' primary deployment is in the PCS band. As a result, measures of TELUS spectrum utilization show world leading efficiency, as TELUS migrates CDMA assets to HSPA+ in a fully subscribed spectrum environment¹⁰¹.

122. Due to unprecedented demand caused by data growth, TELUS has already accelerated its plans to deploy LTE infrastructure in 2011 using AWS spectrum in order to migrate traffic

⁹⁹ US operators Verizon and AT&T have been holding since 2006 fifteen year AWS spectrum licences with no build out requirements.

¹⁰⁰ Commercial mobile spectrum is only offered up by regulators infrequently, historically every five to seven years.

¹⁰¹ TELUS is in the process of utilizing its AWS holdings for LTE as part of TELUS' migration strategy from both CDMA and HSPA.

to AWS spectrum in 2012 as originally planned. Once again, this demonstrates not only more leading edge investment but innovation leadership particularly relative to entrants.

123. The fact that we are compelled to advise our competitors of what is normally highly sensitive marketing information, in order to justify TELUS' right to bid on spectrum, is perhaps another indication of the distortions caused by managed competition.
124. However even with the accelerated rollout of LTE over AWS spectrum to manage growth, TELUS will still require spectrum at 700 MHz to complete its network evolution to LTE because 700 MHz is the principal element in the North American ecosystem for LTE and because of the economies 700 MHz delivers throughout the network and in particular in delivering broadband in less dense suburban and rural areas in a manner that high band spectrum cannot.

Even with the accelerated rollout of LTE over AWS spectrum, TELUS will still require spectrum at 700 MHz to complete its network evolution to LTE

125. As noted above additional spectrum at 700 MHz is critical to simply manage accelerating customer demand for the broadband services TELUS now provides. LTE provides the efficiencies to help manage this load but currently LTE is being deployed on 700 MHz by U.S. operators.
126. Without additional spectrum below 1 GHz it will not be possible for TELUS to benefit from the North American ecosystem being developed by AT&T and Verizon. If TELUS does not have access to this ecosystem it will not have access to reasonable cost handsets and infrastructure in the initial years of the LTE roll out.
127. Further, not all spectrum is considered equal. Without additional spectrum below 1GHz it is not possible for operators to economically build out LTE in rural areas, assuming other operators have the intention of advancing any investment into rural areas to begin with. Spectrum below 1 GHz is also helpful in extending footprints in low density areas around urban centres and in enhancing in-building coverage.
128. High band spectrum (PCS, AWS, 2500 MHz) is optimal in serving certain types of data demand in the high density or urban centres where most operators focus their business strategies today. High band spectrum is of little help in extending rural service. Operators that have a proven track record in national builds therefore must have access to 700 MHz for LTE, if LTE is ever to be available in both urban and rural locations.
129. If TELUS is to keep pace with this fundamental shift in demand and participate in helping Canada benefit from the innovation and productivity advanced mobile broadband will bring, government must ensure that TELUS' infrastructure in all parts of Canada can evolve to LTE.
130. The entrants suggest the incumbents have sufficient spectrum at 850 MHz and therefore do not need 700 MHz to rollout LTE but that is simply wrong on several counts. Such commentary first misses the step change in consumption cause by data and video growth in Canada.
131. While the operators that built networks in the 1980s, were granted 25 MHz of 850 MHz spectrum, only Rogers was granted it nationally. All other operators were granted 850 MHz spectrum only within their regional ILEC territories of the time. Accordingly, while TELUS holds 850 MHz spectrum in Alberta and BC along with a small primarily rural area of Eastern Quebec, it holds no 850 MHz outside of those territories.

132. As noted by parties, TELUS does currently gain the benefit of access to Bell networks operating on its 850 MHz and PCS spectrum through the network access agreement. However, TELUS does not jointly own such spectrum with Bell as Rogers and Bell do at 2500 MHz.
133. While the Bell and TELUS network access arrangement provides each carrier access to the network of the other the maximum amount of 850 MHz spectrum being used by those networks remains at 25 MHz. As the customer loading on the network doubles, the total amount of spectrum in that band for each carrier is notionally cut in half to 12.5 MHz. Given that each carrier also operates both CDMA and HSPA networks on these same frequencies in both urban and rural locations and given that demand for data is accelerating capacity exhaust, it can be demonstrated that our 850 MHz network is already fully subscribed.
134. While some parties may simplistically suggest that the solution to increasing spectrum at 850 MHz is to accelerate the migration of CDMA customers, the inverse is actually the case. CDMA users tend to be users of voice and feature phones, not smartphones, and when such customers migrate to the HSPA+ platform they also generally shift to a smartphone at that time. As a consequence the average mobile data usage associated with each customer migration to HSPA+ can increase by as much as six times. In other words, the faster customers migrate to smartphones on HSPA+, the worse the capacity challenge becomes and the greater the need to shift to spectrally efficient LTE.
135. TELUS would also note that even as it moves HSPA+ to advanced 4G, the current ecosystem for LTE in North America is evolving first at 700MHz and to limit our access to that spectrum not only limits our opportunity to rollout LTE but likely denies access in rural Canada.

Pressures among entrants to consolidate to gain scale are likely to dramatically change the basis of any assumptions used in the design of 700 MHz and 2500 MHz auction rules

136. The rapid increase in demand for spectrum projected by experts around the world, suggests that the market will go through a period of substantial change and uncertainty and accordingly it will be increasingly difficult for government to predict how wireless markets will evolve. For Canada this unpredictability in the market makes any job of picking winners and losers, based on current views of the wireless market, more difficult because there is no static model, or status quo, to work from.
137. However, one thing seems certain: In order to reach the scale necessary to meet demand entrants will increasingly be examining opportunities to consolidate or share spectrum to achieve scale¹⁰².
138. Bell has noted in its comments the market is not large enough for more than three of four players, while principal Wind shareholder Naguib Sawiris has indicated that other new entrants have no chance of survival.¹⁰³
139. Consolidation and increasing scale is not only a Canadian phenomenon but rather a process already underway globally and Canadian operators are already at a scale disadvantage relative to global operators¹⁰⁴. The imminent merger of Orange and T-Mobile in the UK is an example of this as is the recently announced acquisition of T-Mobile in the U.S. by AT&T.
140. We note with some irony, that while the U.K. and U.S. markets are often cited as the standard for competitiveness, the Canadian market already has a more balanced level of competition when it comes to evaluating it from the perspective of the relative strength

¹⁰² "I don't think there is any question in my mind that it would be good for all parties concerned that the new entrants consolidate" Alex Krstajic, Dec 21, 2010.

<http://www.financialpost.com/news/Public+Mobile+fighters+hold/4010412/story.html>

"We are extremely well capitalized. I would love to be an Acquirer. I think one or more of the other new entrants (will) run out of money by the end of this year," Alek Krstajic said at a news conference March 31, 2011

¹⁰³ See, for example: "We believe that Wind should be the consolidator of all the smaller players here. We are going to be open to that. We are not interested in smaller players that are only coming with cash or the licences they paid cash for. We want them to succeed and have some subscribers, because we can't do the job alone. And we'd be very happy to be a consolidator." Orascom CEO Naguib Sawiris, <http://www.theglobeandmail.com/report-on-business/rob-magazine/globalive-financier-we-will-make-pain-and-they-will-suffer/article1778266/singlepage/>. 29 October 2010; republished 4 February 2011.

See also: "They [the other new entrants] will be dead on arrival. Wind should be the consolidator of all the smaller players here" Orascom CEO Naguib Sawiris, <http://www.theglobeandmail.com/report-on-business/canada-is-a-telecom-backwater-says-bold-backer-of-wind-mobile/article1690690/page2/> 30 August 2010.

¹⁰⁴ Ironically, Orascom CEO Naguib Sawiris and his Orascom empire may itself be the next big target as talks continue between Russian controlled VimpelCom and Orascom to merge under Russian control to form the fifth largest carrier in the world.

of the market's top three players. In fact in the last two years, the relative market share between incumbents shifted dramatically due (see table below) to investments in HSPA+ networks to end the Rogers GSM monopoly. As economists note, dynamic shifts in market share are a strong sign of a competitive market. In 2010, postpaid net addition market share of the incumbents shifted by as much as 16 percentage points from 43% to 26% from 2009 levels due to the change in competitive landscape.

Table 6 – Postpaid Net Adds (000's) and Net Add Share %, TELUS, Bell, Rogers

Operator	2010	4Q2010	4Q2010	4Q2010	4Q2010	2009	4Q2009
TELUS	415	109	132	109	65	379	109
Bell	500	157	159	103	81	331	110
Rogers	319	49	125	98	47	528	109
Total	1,234	315	416	310	193	1,238	328
TELUS	34%	35%	32%	35%	34%	31%	33%
Bell	41%	50%	38%	33%	42%	27%	34%
Rogers	26%	16%	30%	32%	24%	43%	33%

141. Moreover this shift of share in terms of incumbents is a sign of a dynamic level of competition amongst the top three that suggests a more healthy and robust market in Canada than comparator markets dominated by two providers.
142. In urban markets new entrants are also taking a significant share of new subscribers adding to competitive intensity and adding to speculation that entrants will consolidate to achieve greater scale.
143. Given the number of new entrants in the Canadian market and the market's relatively low population densities, investment analysts have long predicted market consolidation in Canada and it would be of no surprise to anyone on Bay Street if merger scenarios either amongst the three pure play entrants, or combined with cable or regional operators, were currently being explored.
144. Due to the limitations on the resale of AWS spectrum originally set aside in 2008, only entrants, including cable companies and regional operators like MTS and SaskTel are allowed to consolidate amongst themselves prior to and beyond the next auction so the result of this will be to increase the competitive position of the fourth and/or fifth carrier.
145. Because the explosion in demand will inevitably drive shifts in market / spectrum consolidation with or without changes in foreign ownership restrictions, Industry Canada must be cautious in how it manages the next auction because the assumptions it makes

with respect to the scale and resources of the wireless entrants (free cash flow, spectrum holdings) will likely materially evolve after it establishes rules in 2011 for upcoming spectrum auctions.

146. In this respect Industry Canada should consider that there is a high degree of probability that some operators seeking a set aside of more spectrum may have substantially increased their holdings pre- or post-auction by merger or acquisition.
147. Consolidation in terms of spectrum holdings means that two things are likely to occur. First, the number of new entrants will have shrunk as a result of consolidation and second, as a consequence of that, the spectrum holdings of the remaining entrants will have increased materially.
148. The anticipated consolidation of entrant spectrum will not alter the enviable ratio of subscribers to spectrum of the combined entity but it would have a positive impact on the ability of the combined entity to achieve scale and provide the flexibility to manage the technology evolution from HSPA to LTE.

A set aside is generally intended to assist entrants that are financially challenged and would otherwise be unable to bid effectively

149. The principle behind a set aside is to advantage operators that are otherwise not financially strong enough to engage in competitive bidding in an open auction. This raises an issue of whether operators that cannot effectively bid could ever be viable in a market moving to ever greater scale. Clearly all signals globally suggest that the trend is to consolidation and scale and efforts to diminish Canadian incumbents and create many smaller players in Canada may only diminish our industry.
150. It seems clear that the principle behind a set aside simply does not apply to cable entrants and regional operators, since these operators are able to compete without support given their dominance in core markets and the free cash flow that such dominance produces.
151. TELUS also does not support a set aside as proposed by some parties because a set aside is distortive in terms of fair allocation and an equitable bidding process. Our evidence provided in the NERA study demonstrated that the last set aside combined with poor auction design resulted in overpayments of as much as \$1.5 billion.
152. There is no need to replicate this damage again. A set aside or other intervention is not necessary where bidders have the financial ability to make competitive bids in the absence of such interventions.
153. In Western Canada, Shaw is the dominant provider in the broadcast distribution market and has demonstrated a degree of market power by its ability to continually increase prices above CPI. Shaw also holds a roughly 60/40 edge in market share over TELUS in high speed Internet and was able to use its strong financial position to acquire Canwest Global for \$2 billion. Clearly Shaw has the financial power derived from markets it dominates to bid in an open market.
154. Similarly Quebecor is a vertically integrated carrier and a dominant force in Quebec. As Quebecor demonstrated in the AWS auction it had the ability to acquire all spectrum that was set aside in Quebec, because it had a business strategy to support the higher bids it made.
155. In our view it is clear that cable companies, particularly Shaw and Quebecor have the ability to bid competitively absent intervention or government assistance, just as TELUS has had to spend several hundred million dollars in incremental capital above billions of dollars in broadband network investments to compete with the cable monopoly in the provision of television entertainment services. These operators are vertically integrated

and dominant in cable, Internet and broadcast markets and their market power is underscored by the ability to raise prices in the market year over year.

156. Similarly, regional ILECs like MTS Allstream and SaskTel dominate the wireless business in their home provinces and have the financial power to bid competitively to maintain their dominant market share in territory. TELUS is very surprised that MTS Allstream continues to ignore its regional dominance and seek extended protection of the “new entrant” status it was granted in the AWS auction. MTS’ ongoing attempts to characterize the market as national are undermined by several factors, not the least of which is its own call for Tier 2 (i.e., provincial) licensing of 700 MHz spectrum.
157. Within that tier, and specifically within the province of Manitoba, MTS at a circa 55% market share, holds far greater market power than any of the so-called “Big 3” do on a national scale. Indeed, TELUS and Bell hold national market shares in the range of half that controlled by MTS in Manitoba. It is inconceivable to TELUS that the government could (again) grant a provider of such obvious dominance as MTS new entrant status on the basis of a hypothetical national market that it has no declared interest in contesting.
158. TELUS would remind government that while MTS, the dominant carrier in Manitoba, was granted new entrant rights in its home territory as well as nationally, TELUS has had to build out Manitoba without any 850 MHz spectrum and is blocked from mandated roaming even though it has no incumbency in that province. Yet it is MTS that again seeks a set aside even as it continues to deny TELUS’ Manitoba-based customers access to data roaming in Manitoba.
159. We submitted that Globalive also has the ability to bid competitively given the size of its major shareholder. And we noted that with the proposed absorption of Orascom into the VimpleCom empire that Globalive’s major shareholder would control over 176 million subscribers worldwide. In terms of relative size that is over 40 million subscribers more than the 128 million subscribers of the proposed combined AT&T T-Mobile USA entity if approved by U.S. regulators. In contrast, TELUS, considered one of the “Big 3”, has 7 million subscribers.
160. Finally and perhaps most importantly in the current circumstances, entry has already occurred and bidding strategies in the 700 MHz auction cannot change that dynamic. This is a critical point because economic theory would suggest the alleged bidding behaviour to foreclose entry makes no business sense if entry has already occurred and is sustainable. Cable company entry in wireless, as an example is a given (i.e., sustainable) and, unlike incumbents, regional cable companies are in a position not only to compete aggressively through bundling opportunities but to increase holdings and scale by

acquiring spectrum via mergers and acquisitions in a manner that incumbents are prohibited from engaging in under the AWS rules.

If open auctions are not allowed, then an auction cap is generally a better alternative than a set aside

161. To ensure the rapid evolution of Canadian wireless infrastructure from HSPA to LTE requires, as a starting point, that all operators have an opportunity to bid for 700 MHz spectrum, not just so-called new entrants. That is not to suggest that the objective of promoting competition is not important; but rather to suggest that the degree of competition already achieved in a relatively small market should not be so readily dismissed. Any intervention to promote competition has to be balanced against other national goals around infrastructure and the digital economy and, as we note above, not diminish the level of competition we have already achieved in this country.
162. TELUS notes that the anticipated merger of T-Mobile and Orange in the U.K. and the proposed acquisition of T-Mobile USA by AT&T, underscore a unique situation in Canada all too easily dismissed. Even as relative giants are combining in the U.K. and U.S. to increase scale economies and to manage data traffic growth, resulting in an increased concentration of market share among the top two operators in these markets, the \$6.6 billion investment by TELUS a decade ago has resulted in a highly competitive market of three relatively strong players in the Canadian market even before powerful cablecos and pure play entrants came to market.
163. As we discuss below, to the extent that government chooses to intervene in terms of allocating spectrum, it should favour an auction cap over a set aside as a more efficient alternative to the achievement of this policy. An auction cap, if reasonably designed, can assure government that there will be multiple holders of 700 MHz and thus enable a more extensive rollout of LTE to the most customers, in the most regions in Canada, over the shortest period of time.
164. A set aside, particularly without any material rollout obligations, will ensure that the vast majority of the population and most communities outside the largest centres will miss out on the evolution to LTE.
165. In its comments TELUS has supported open auctions based on the proposition that those operators that value the 700 MHz spectrum the most will be the most likely to use that spectrum most efficiently.
166. However recognizing a high degree of likelihood that government will intervene to manage competition, TELUS has also set out an alternative / fallback position for intervention in the auction that favours a cap over a set aside as the best way to ensure multiple winners of spectrum while minimizing distortions caused by set asides.

167. The principal point being that a cap allows for open and responsive bidding across all blocks of spectrum even if bidders cannot own more than a set number of blocks in total. This drives more honest bidding because of the lose-lose scenario involved, unlike the game bidding driven by the win-lose scenario created by a set aside and evidenced by the excessive game bidding that dominated the 331 round AWS auction.
168. The reason that a spectrum cap is generally a better alternative is that (a) it avoids the costly bid gaming that unnecessarily destroyed capital in the last auction that could have been better spent on investment in infrastructure while (b) it can be set by Industry Canada to ensure multiple winners in the auction.
169. On the subject of a cap, it should be emphasized first, that TELUS proposes a cap within the context of spectrum being allocated in the auction only (i.e., an auction cap) and not, as several parties have suggested, with respect to aggregate carrier spectrum holdings below 1 GHz.
170. TELUS notes the recent announcement by Ofcom, the regulator in the U.K., that it is proposing low band caps for its upcoming auction of 27.5 MHz x 2 (i.e., 55 MHz) with the objective of promoting a four player market. Regardless of whether that is attainable, given current consolidation in the U.K., it is important to note that Ofcom has set the low band cap much higher than entrants in Canada are lobbying for, thereby assuring the U.K. mobile industry in totality will not be damaged and therefore that the majority of U.K. subscribers that are served by incumbents are able to benefit from innovative new services as well.
171. Secondly, it should be emphasized that any current network access arrangements, whether TELUS and Bell or Rogers and Bell nationally or Rogers and MTS Allstream in Manitoba, has no bearing on the individual spectrum holdings or the interests of an individual company in new spectrum. Accordingly, TELUS submits that it is not appropriate to count spectrum separately owned but used under commercial agreement against operators in the network access arrangement for cap purposes. As set out above such spectrum does not increase the amount of spectrum held by a particular carrier and in fact increases the total number of customers accessing that spectrum.
172. Speaking for itself, TELUS observes that nothing in its network access agreement with Bell results in a devolution of spectrum from one participant to the other – indeed, were the agreement to end tomorrow, the 850 MHz and 1900 MHz spectrum holdings of each participant would be precisely as they were prior to the agreement.
173. Moreover, the intensity of the retail competition between entities currently party to network access arrangements puts the lie to any suggestion that such entities are

“affiliated” or hold a common interest in sharing the spectrum acquired by either of them in future.

174. In fact the absurdity of some of the argument is best characterized by the Seaboard report which allocates spectrum at 2500 MHz currently owned jointly by Bell and Rogers to TELUS.
175. Perhaps what Bell and Rogers’ Inukshuk partnership underscores, or the MTS / Rogers partnership for that matter, is that commercial agreements abound where potential partners are willing to bring mutual benefits to customers, through a willingness to make substantial and critically important investment and take risk in building infrastructure.
176. In our view the pressure on all operators to pursue scale in order to invest underscores the likelihood that entrants themselves will actually consolidate and/or enter into mutual agreements in the 2011 timeframe.

A large set aside for new entrants would forestall the rollout of LTE in rural areas and directly undermine the digital economy strategy around increasing access in rural areas

177. The shift in demand due to the emergence of mobile Internet is not an urban only phenomenon but is as prevalent in rural areas wherever mobile broadband may provide the primary access to the Internet. If Canada is to keep pace with this fundamental shift in demand, and consequently benefit fully from the innovation and productivity mobile broadband will bring, it must ensure that policies are adopted not only to promote more competition but also that ensure continued investment in all of its wireless networks, and in all parts of Canada, so that the nation can evolve to LTE in a timely fashion.
178. TELUS contends that if all, or most spectrum, is reserved exclusively for entrants then the rollout of LTE to rural areas will be delayed. This position is supported by other parties including incumbents that have proven track records in rural investment. More significantly it is confirmed in comments of AWS entrants that agree that 700 MHz is required for rural builds but still seek to avoid any commitment to build out beyond the most lucrative urban and suburban markets.
179. Globalive for instance calls for a complete set aside for entrants, but then in another part of its submission notes that in-territory roaming must be extended for 10 years because a 5 year build out requirement is too short a period to build networks. Effectively Globalive is proposing that all spectrum be reserved for operators like itself, while at the same time signalling an unwillingness to build out in a reasonable timeframe.
180. Set aside proposals, particularly proposals like Globalive's that call for 100% of the spectrum to be set aside, will not only undermine the ability of TELUS to rollout LTE but will impede the rollout of LTE to rural areas in general. TELUS notes the widespread local community submissions raise the concern that if ILECs are not allowed to bid on sufficient spectrum, rural LTE will be deferred indefinitely. In effect, any set aside almost guarantees that spectrum in the set aside bands will not be used to build out rural locations.
181. 700 MHz is too important for rolling out LTE to improve not only rural broadband but related innovation and productivity, to be allocated only to those operators that have signalled they may not build for up to 10 years. The government should be very concerned by requests to forgo imposing buildout requirements, particularly when coming from the very beneficiaries of special treatment in the AWS auction.

182. Many of these same organisations, specifically Shaw, Public Mobile, and Mobilicity are concurrently asking for extensions of in-territory roaming rights for current licences because of their own decisions to not deploy beyond urban centres.
183. Perhaps the most audacious of these requests is that from Shaw who, at paragraph 102 of its submission describes the planned 5 year expiry of the in-territory roaming right for AWS entrants as “premature”, potentially leading it to have to consider “corporate transactions or other arrangements that are not commercially or financially sensible, which would compromise [its] ability to offer cost-effective, high-quality services to consumers.” Surprising statements coming from a company that opens its submission (see paragraph 2) by extolling its anticipated ability to drive synergies between its wireline and wireless operations for the benefit of customers whenever it finally chooses to launch.
184. TELUS would remind Industry Canada once again that Shaw is not financially challenged and in fact spent \$2 billion in 2010 to acquire Canwest Global in a transaction it deemed “financially sensible”. While such a massive transaction may have been “sensible” for Shaw, it should certainly not be considered a justification for the delay of build out requirements just because Shaw chose to invest elsewhere, even after government granted it special treatment in the last auction.
185. When companies such as Shaw are asking for extensions of unexercised privileges previously granted, and are concurrently asking for rebates on rural roll-out expenses (paragraph 113) as an incentive, the government has good reason to be highly sceptical of their commitment to rural markets.

Conclusion

186. In conclusion, TELUS submits that:

- a. Because 700 MHz will be the primary spectrum for the LTE ecosystem in North America, TELUS, offering service to the vast majority of Canadians, must have the opportunity to bid on this spectrum or widespread LTE deployment will be delayed.
- b. TELUS is the most spectrally efficient major carrier in North America and has the most pressing need for more capacity to support its broadband customer base.
- c. Access to 700 MHz for TELUS is critical to support truly innovative broadband applications throughout Canada, rural build outs and the needs of first responders that will likely rely on this ecosystem.
- d. Consolidation is occurring globally and will very likely occur between entrants before or shortly after the next auction(s) reducing the validity of arguments that spectrum must be reserved for entrants.
- e. Cable companies and regional operators have the financial resources to bid and be successful in an open auction and should not be advantaged in the auction.
- f. Globalive's principal shareholder is likely to become Russian giant VimpelCom assuming its merger with Orascom creates the fifth largest wireless carrier in the world with 176 million subscribers. Either way, Globalive has the resources to bid in an open auction.
- g. If an open auction is rejected then an auction cap is generally a less distortive mechanism because a cap still encourages fair and honest bidding, without the high risk of hundreds of millions of dollars being diverted by inappropriate gaming of the system.
- h. Any cap must allow TELUS¹⁰⁵ to bid on at least 24 MHz of paired 700 MHz spectrum nationally
 - i. given TELUS' current lagging spectrum position;

¹⁰⁵ TELUS notes in this regard that it would support the cap mechanism proposed by Shaw and Videotron (i.e., two FDD block cap in general but a one FDD block cap where an operator holds 850 MHz spectrum) with the exception that (a) TELUS be waived from being limited to one block where it holds 850 MHz in a onetime allowance associated with the 20 MHz it previously had stripped where it held 850 MHz, and (b) Shaw and others' proposal that TELUS be treated as a single bidder with Bell be thrown out based on TELUS detailed analysis to follow.

- ii. given the magnitude of our client base and the rate of consumption of advanced mobile broadband services that we need to support; and
 - iii. to leverage the efficiencies of wideband LTE, particularly in serving rural/remote areas where complementary high band overlays are not economic.
- i. In order to ensure that 700 MHz is utilized outside of key urban areas there must be a “use it or lose it” build out requirement in all Tier 3 service areas that TELUS suggests should be invoked three years after licence issue.

Errata and Notes Associated with the Initial Responses to SMSE-018-10

187. TELUS selectively highlights several items in this errata section. Given the number and the length of the original submissions and given the limited time period to develop reply comments, it is not feasible to highlight everything that TELUS deems inaccurate or misleading in all the submissions received by the Department. By not highlighting any particular contention, made in any submission in this errata section or within the body of TELUS' reply comments, TELUS, by its silence, is in no way conceding that such contention is accurate.

Commercial Mobile Services (Section 4)

4-1. What is the general need for additional commercial mobile spectrum at this time and what do you anticipate the future needs to be?

188. MISINFORMATION SUMMARY – Based on the glut of misinformation¹⁰⁶ submitted to the Department, TELUS has used the bulk of its reply comments to accurately detail spectrum need in Canada and to compare it with major U.S. operators. We quickly summarize the key pieces of misinformation that entrant allegations are built upon.

- a. TELUS' reciprocal network access arrangements with Bell involving 850 MHz and PCS spectrum mean:
 - i. MYTH: TELUS has 165 MHz of spectrum per Seaboard Group et al.
REALITY: See paragraphs 67 - 72. (Note: no entrants repeated this directly, but picked it up in their international comparisons.)
 - ii. MYTH: TELUS has access to Bell's 2500 MHz spectrum per Seaboard.
REALITY: This is patently untrue.
 - iii. MYTH: TELUS should be treated as one with Bell for the purposes of any spectrum caps associated with 700 MHz.
REALITY: This is totally unfounded and debunked in paragraphs 67 - 72. TELUS and Bell are competitors who fight over customers nationally. TELUS and Bell's reciprocal access arrangements are borne of the very industry structure that Industry Canada created through its spectrum allocation policy from 1985 to 1995. The upcoming rules can either

¹⁰⁶ The spectrum position of TELUS has been attacked speciously by a Seaboard Group report – *Over the Rainbow: Thoughts on the 700 MHz Discussion*, February 2011. The report makes certain absurd conclusions which are reiterated repeatedly by entrants, none of whom chose to actually place this report on the record.

entrench this necessity or the rules can allow the market to decide what structure is more efficient.

- b. MYTH: TELUS is not only inefficient in its use of spectrum but is about 24 times less efficient than U.S. operators.
REALITY: See paragraphs 75 – 124.
- c. MYTH: TELUS has no need for spectrum through 2015.
REALITY: See paragraphs 75 – 124.
- d. MYTH: TELUS has most spectrum of all operators globally per Seaboard Exhibit 6.
REALITY: See paragraph 72 and Figure 6.
- e. MYTH: TELUS has 30 MHz of ESMR spectrum nationally.
REALITY: See paragraph 67.b.
- f. MYTH: “Rogers, at 165 MHz, is a relatively distant second” in terms of spectrum in Canada per Seaboard page 9.
REALITY: See paragraphs 67 – 72.
- g. MYTH: Pre-AWS, PCS spectrum was gifted to incumbents (pg 10).
REALITY: In fact only 15% of it was gifted to incumbents and in fact, TELUS has a higher spectrum cost than every single entrant.

189. ACCURATE INFORMATION SUMMARY – By contrast here in summary form is TELUS’ view of impartial, detailed, accurate data. The following table is a compilation of Tables 2, 3, 4, 5 appearing earlier in this reply submission showing in one comprehensive view:

- a. how much total spectrum Canadian (and for reference purposes top U.S.) operators have;
- b. how many customers they serve as at year end 2010 and are forecasted¹⁰⁷ to serve at year ends 2012 and 2015;
- c. their spectrum utilization levels at 2010, 2012 and 2015 in time in terms of customers per MHz-pop¹⁰⁸ based on the data in (a) and (b) above; and

¹⁰⁷ Source for Canadian subscriber forecasts per operator: TD Newcrest Canadian Wireless Industry Report, Feb 17th 2011 except for Eastlink and Public Mobile which are a combination of TD Newcrest and TELUS estimates. Source for U.S. subscriber forecasts per operator: Frost & Sullivan, in 2010 North American Consumer Mobile Communications Outlook N783-65, June, 2010.

- d. the spectrum quantity each would need from the 700 MHz and 2500 MHz auctions (in terms of total MHz-pops and also average MHz spectrum depth across their current spectrum coverage footprint) in order to have at year end 2015 an equivalent utilization level to Canadian industry spectrum leader, Rogers¹⁰⁹, based on the data in (a) and (c) above.

Table 7 – MHz-pops per carrier and subscribers/10,000 MHz-pops, current and projected

Operator	a.	b.			c.			d.	
	Spectrum Quantity	Subscribers ('000s)			Spectrum Utilization Ratio (Subscribers per 10,000 MHz-pop)			2015 Spectrum Need	
	MHz-pops (M)	2010	2012	2015	2010	2012	2015	MHz-pops (M)	Avg Depth (MHz)
MTS	84	484	506	520	57.6	60.2	61.9	133	119
TELUS	1,692	6,971	7,681	8,451	41.2	45.4	49.9	1830	61
Verizon	26,282	94,845	118,650	129,549	36.1	45.1	49.3	27,711	97
AT&T	24,412	94,827	103,000	116,000	38.8	42.2	47.5	23,934	84
Mobilicity	175	100	517	825	5.7	29.5	47.1	169	10
Wind	330	229	798	1,336	6.9	24.2	40.5	227	10
SaskTel	156	564	587	601	36.2	37.6	38.5	94	97
Shaw	188	-	63	722	0.0	3.4	38.4	113	12
[AT&T / T-Mobile]	40,973	128,652	138,700	154,500	31.4	33.9	37.7	23,419	82
EastLink	108	0	33	377	0.0	3.0	34.9	49	10
Entrants	1,359	518	2,148	4,732	3.8	15.8	34.8	613	20
Videotron	381	139	487	1,112	3.6	12.8	29.2	82	6
Bell	3,091	7,242	7,847	8,597	23.4	25.4	27.8	492	18
Rogers	4,517	8,978	9,888	10,838	19.9	21.9	24.0	0	0
T-Mobile	16,561	33,825	35,700	38,500	20.4	21.6	23.2	-515	-2
Public	177	50	250	360	2.8	14.1	20.3	-27	-2
Sprint	31,538	48,370	49,000	51,500	15.3	15.5	16.3	-10,074	-35

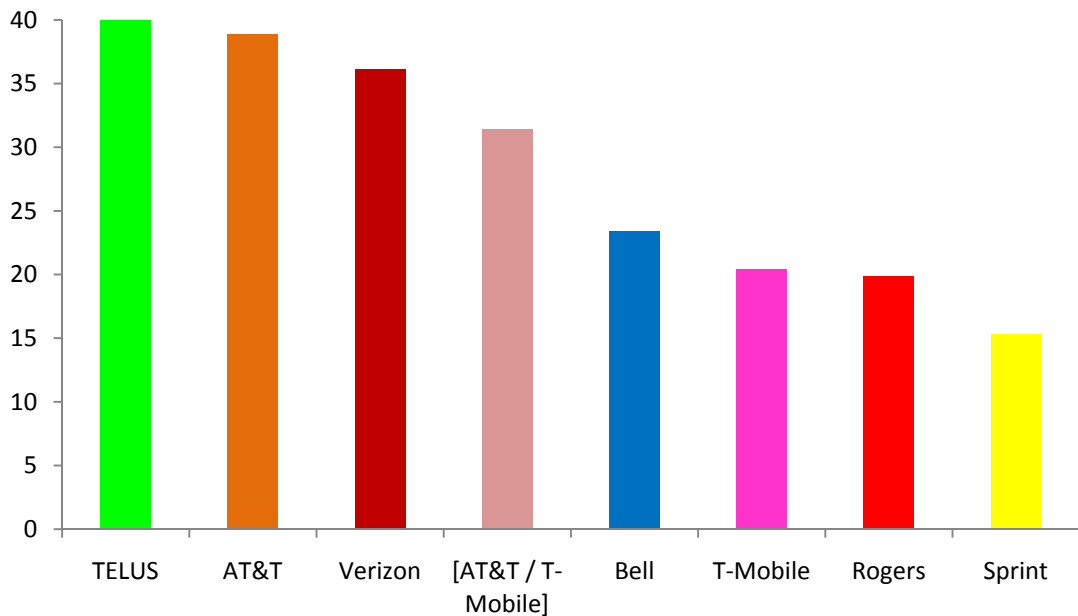
¹⁰⁸ These are views of utilization at year end 2015 before accounting for how Canadian operators will benefit from the upcoming 700 and 2500 MHz auction(s) in Canada. Note: The data is shown in customers per 10,000 MHz-pops to provide easy to work with numbers (as opposed to customers per MHz-pop).

¹⁰⁹ We use Rogers as a benchmark because Rogers represents a global high water mark in spectrum holdings and Rogers is the spectrum leader in Canada and thus the customers per MHz-pop that Rogers might face at year end 2015 (i.e., 24.0 in 2015), without considering any additional spectrum Rogers might acquire at the upcoming auction(s) represents a reasonable goal for the balance of operators in Canada.

190. Figure 8 below¹¹⁰ depicts relative spectrum utilization of the major North American incumbents as at year end 2010. We provide this chart to reiterate the inaccuracy of data presented by almost all, if not all entrants on this point, referring to a woefully inaccurate Seaboard report and its infamously absurd Exhibit 1 right in the executive summary. We see that:

- a. TELUS is, bar none, the major incumbent within North America with the most utilized spectrum. TELUS has the highest ratio of customers to spectrum quantity (in MHz-pops). Once again, spectrum utilization is a proxy for spectrum need.
- b. This is in marked contrast to the erroneous data presented by Seaboard Group and referenced by several AWS entrants.

Figure 8 –2010 Subscribers/10,000 MHz-pops of Major North American Incumbents



¹¹⁰ Sources: Industry Canada; FCC; Nordicity Research.

Open Access (Section 9)

9-1 The Department seeks comments on whether there is a need for government intervention to promote open access, by increasing access by users to handsets and/or applications.

191. TELUS notes that while some parties endorsed the concept of open access generally, most did not address it at all. Of those that did, none gave compelling reasons for intervention by way of licence conditions or other means. Rather, the paucity of comments on this issue demonstrates that, as TELUS and several other parties explained in their comments, events have overtaken the kinds of concerns that drove the FCC to encumber the upper C block in the U.S. with ill-advised open access conditions. The many competing wireless providers in Canada already provide access to a variety of device types that run a variety of operating systems, and through them, Canadians have access to the Internet content and applications of their choice.
192. Hypothetical concerns regarding access to content and applications have remained just that – hypothetical. The days of “walled garden” style content and application platforms have been largely replaced by open access to the Internet, driven by user preferences. TELUS suggests that the government should consider the issue of open access addressed in 2007 by the FCC, to be largely a historical one, and certainly not one that calls out for potentially distorting intervention to achieve a given outcome in the marketplace. Canadian consumers and businesses already have enormous choice among wireless operators, device types, devices, operating systems, applications and content, and the range of choices can be expected to continue to grow in the future.

Auction Timing (Section 10)

10-1. The Department is considering three options to proceed with the 700 MHz and 2500 MHz bands auction processes:

Option 1: to conduct an auction for licences in the 700 MHz band first, followed by an auction for licences in the 2500 MHz band approximately one year later;

Option 2: to conduct an auction for licences in the 2500 MHz band first, followed by an auction for licences in the 700 MHz band approximately one year later;

Option 3: to conduct one combined auction for licences in both the 700 MHz and 2500 MHz bands, which would be six months later than the first auction in the case of separate auctions.

Industry Canada is seeking views on the merits or disadvantages of proceeding with each of the various options stated above. The Department seeks to understand the magnitude of interdependencies between the two bands from a business/operational perspective.

Specifically, comments are sought as to the extent spectrum in these bands is interchangeable or complementary from both a technological and a strategic perspective. In addition, views on the business and financial capabilities of participating in a joint auction for both bands are sought. Comments should include the rationale for selecting one option rather than another.

193. Nothing in the original submissions causes TELUS to change its position on the recommended timing for the 700 MHz and 2500 MHz auctions. TELUS believes that because over half the 2500 MHz band has been allocated to date and has already been transitioned to mobile, that the 2500 MHz auction must either come first or be run at the same time as the 700 MHz auction and both should be as soon as possible. To support the government's final decision in this regard, TELUS provides the following commentary on the positions of the various other operators in Canada:

- a. Rogers and Bell want the 700 MHz auction first. This is not surprising given they both already have an enviable 2500 MHz spectrum position and the 2500 MHz band has transitioned to mobile as of March 31, 2011. TELUS recommends that the Department ban any operator from using the 2500 MHz band for mobile use until the 2500 MHz auction has been completed and licences issued.
- b. Rogers further suggests delaying the first auction (of 700 MHz spectrum) until 2013, which could push the 2500 MHz auction out to 2014. This appears to confirm that Rogers has no near term spectrum exhaust issues and therefore seeks to take advantage of this while an operator like TELUS struggles to meet demand. This concern should be a key consideration the Department's decision making on auction timing.

- c. Mobilicity suggests that the 2500 MHz auction should be delayed until some future point when it is determined that there is a need for more spectrum. While Mobilicity has erroneously proclaimed that TELUS has no imminent need for spectrum, the Department should assume that Mobilicity has no imminent need for high band spectrum given its position on auction timing. TELUS' detailed analysis shows that Mobilicity needs only 10 MHz of spectrum (low band or high band) to the end of 2015 to catch up to Rogers on a relative basis.
- d. Public Mobile requests that the auctions be no earlier than mid 2012 in order to give them time to raise capital. This confirms TELUS' detailed analysis that Public Mobile has no need for spectrum through 2015 to catch up to Rogers on a relative basis.