TELUS COMMUNICATIONS INC.

Reply Comments for

CONSULTATION on a TECHNICAL, POLICY and LICENSING FRAMEWORK for SPECTRUM in the 600 MHz BAND

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Spectrum Management and Telecommunications

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Executive Summary

1. TELUS appreciates the opportunity to provide its reply comments.

2. TELUS fully supports the steps initiated by the Department to jointly repack with the US and make valuable 600 MHz mobile broadband spectrum available for the benefit of all Canadians. Combined with 3.5 GHz and mmWave bands, the allocation of this spectrum in a timely manner will be instrumental in securing Canada’s position as a global leader in 5G.

3. TELUS firmly believes that 5G networks will act as a stimulus for disruption in modern digital economies. 5G networks will serve as a platform for innovation and will drive digital development in vertical industries such as health care, transportation, agriculture, manufacturing, automation, and smart cities. As such, 5G will become a central technological pillar in the realisation of the Government’s Innovation Agenda: Empowering Canada’s digital society, building a highly talented workforce capable of undertaking the challenges of the 21st century, and maintaining Canada’s leadership in a digitally competitive world.

4. TELUS continues to advocate for the release of additional spectrum to address the insatiable demand for wireless data and enable the emergence of disruptive applications. TELUS offered its strong support for the bold steps proposed by the Department in response to the recent Consultation on Releasing Millimetre Wave Spectrum to Support 5G, in which the Department demonstrated a willingness to address critical incumbent coexistence issues and challenge the status quo in order to accelerate Canada’s 5G journey.

5. TELUS is also a strong proponent of a reliance on market forces to drive Canada’s digital economy leadership. Both the Spectrum Policy Framework for Canada (SPFC)¹ and the Framework for Spectrum Auctions in Canada (FSAC)² emphasise the reliance on market forces as a guiding principle.

¹ http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08776.html
² http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01626.html
6. The framework proposed in this 600 MHz consultation does not rely on market forces and will not support the realisation of the Government’s Innovation Agenda. TELUS disagrees with key aspects of the Department’s proposals. The proposed oversized “pro-competitive measures” are destined to result in the distortion of auction pricing and an inefficient use of the band. TELUS remains of the view that the unique Canadian four player policy of sustained privilege and subsidy is misguided. It has to be quickly wound down and migrated to a reliance on market forces given the emergence of a sustainable market structure. Starting with the 600 MHz auction, there are alternative forms of competitive measures that would fulfill the Department’s objective of providing regional providers with privileged access to a substantial amount of broadband sub-GHz spectrum while resulting in far less market distortion and rectifying imbalances in low band spectrum holdings between national providers.

The alleged “pro-competitive measures” will not fulfil the Department’s stated objectives and are destined to hinder Canada’s digital economy

7. In the view of NERA Economic Consulting expert Christian Dippon:

October 2 submission³:

Fundamentally, the evidence in this matter does not support the introduction of pro-competitive measures in the upcoming 600 MHz auction. The Canadian marketplace for wireless service is competitive. Facilities-based nationwide and regional providers compete for subscribers in a saturated market by employing the latest technology and offering ubiquitous nationwide coverage, thus yielding some of the world’s highest long-term evolution (LTE) penetration rates. There is no evidence of market power, and ISED must weigh the 2014 claim by the Competition Bureau against the vast contemporaneous evidence demonstrating the opposite. Additionally, set-asides restrict spectrum supply to non-eligible providers and open these bidders up to fake bidding (instances where eligible providers drive up the spectrum costs for non-eligible bidders). Thus, set-asides are not simply superfluous but seriously harmful. On this finding alone, I recommend against the adoption of this proposed putatively pro-competitive measure.

November 3 submission⁴:

I have carefully examined the comments about competition and the alleged need for set-asides and found them to be inconsistent with sound economic principles and public policy. None of the Other Respondents conducted a competition analysis despite agreeing that lack of competition is a prerequisite for set-asides. The anecdotal evidence and incorrect claims submitted in lieu of a competition analysis are insufficient to warrant any procompetitive measures. Particularly troubling is the heavy reliance on a statement by the Competition Bureau in its investigation of the Bell-MTS merger. The Competition Bureau made this statement when examining a completely different situation and it has no bearing in the present proceeding. Therefore, it cannot serve as a carte blanche for procompetitive measures such as set-asides. Instead, I urge ISED to review the detailed competition analysis conducted by Dr. Jeffrey Eisenach that the expert submitted in response to the CRTC’s Telecom Notice of Consultation CRTC 2017-259. Dr. Eisenach clearly shows that the Canadian mobile wireless market is competitive. Consequently, procompetitive measures are not required.

The Other Respondents’ comments also reveal a fundamental misunderstanding of the objective of set-asides. The objective of this and other procompetitive measures is not to enrich the bottom line of an eligible provider or to ensure that it has the same amount of spectrum as others. It also does not ensure that all eligible bidders will win spectrum. Rather, it ensures that no bidder increases its maximum willingness to pay simply to keep others out, thereby enabling it to charge supracompetitive rates in the post-auction market. In short, set-asides are to protect Canadian consumers, not the profitability of any particular bidder. Seemingly not understanding the objective of set-asides, the Other Respondents argue that they deserve the spectrum as they have less low-frequency spectrum than others do, that they do not have the financial resources of the nationwide providers, and that they need to be protected against “the incumbents.” Interestingly, other than stating that regional providers have provided consumers benefits in the past, the Other Respondents offer no meaningful evidence that the benefits from set-asides in the upcoming 600 MHz auction would flow through to Canadian consumers.

My overall assessment of the Other Respondents’ comments with respect to competition and set-asides confirms my prior findings. There is no credible evidence that the market is not competitive and that the benefits from receiving set-aside spectrum would flow through to Canadian consumers. My recommendation to ISED is to reject the set-aside proposal and any other procompetitive measure for that matter.

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8. The proposed technical, policy and licensing framework serves to stifle innovation by confining the access of more than 90% of Canadian subscribers to at most 57% of the 600 MHz band. The proposal provided by the Department risks delaying the benefits of 43% of the band reaching Canadians outside of the cable footprint covering only about 70% of the population of Canada by up to 20 years. Note: The regional providers would exacerbate this imbalance when they suggest a 40 MHz set-aside, leaving only 43% of the band to serve 90% of Canadian subscribers. The remaining 57% of the band would serve less than 10% of Canadian subscribers, primarily in top urban/suburban markets, and would likely sit fallow for 20 years outside of these top urban/suburban (cable footprint) markets.

9. Rural Canada remains un-served by regional providers following their privileged access to 700 MHz spectrum in 2014. Despite the regional providers’ (such as Shaw’s) assertions that they want low-band spectrum to build out and expand their networks, they rely and will likely continue to rely on lax deployment requirements and mandated roaming as they expand their footprint in a measured manner. The provision of another oversized set-aside of sub-GHz spectrum to well-capitalised family-controlled regional providers (at the expense of Canadian taxpayers) is unlikely to result in a rapid expansion of served areas and is therefore detrimental to the development of Canada’s digital economy. (Limited urban footprints will slowly enlarge with measured capex and only reach rural Canada by circa 2040 when the proposed deployment conditions of licence finally require it). The Department should be implementing policies that fundamentally rely on market forces to promote Canadian investment and facilities-based competition to benefit all Canadians, particularly in rural and remote areas. As such, TELUS has recommended the bifurcation of Tier 2 licences into urban and rural sub-licences, accompanied by the removal of a set aside component from the rural sub-licence areas.

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TELUS estimate

Shaw refers in its response to the need for low-frequency spectrum for “expanding and enhancing our network” (Paragraph 5); “the potential for new competitors to build out and expand” (Paragraph 12); and “establishing and expanding wireless network coverage” (Paragraphs 33-34).

7 In Shaw’s Q4 2017 earnings call, when responding to a question on the prospects of geographically expanding their wireless network, Jay Mehr (President of Shaw Communications Inc.) commented “I think you'll see our wireless growth strategy and our EBITDA growth focus on existing markets in F’18”, despite Shaw having secured 10 MHz of 700 MHz band spectrum across all of their core market areas.
10. This is a matter of fairness for TELUS. TELUS is the original new entrant that brought a sustainable third national provider to Canadians starting in the year 2000 at great corporate cost, without privileged access to spectrum or subsidy from the Government since going national. Instead, upon going national and self-funding the creation of sustainable competition, TELUS suffered the only clawback\(^8\) of mobile spectrum in Canadian history. TELUS (along with all other early cellular innovators) received modest spectrum grants\(^9\) in 25% of Canada for which it has paid close to a billion dollars in annual fees to date. TELUS’ massive investment to create a sustainable third national competitor without subsidy or privilege was achieved with no sub-GHz broadband spectrum in 75% of the country, with no mandated roaming and with no mandated tower sharing.

11. In 75% of Canada\(^10\), TELUS has no 850 MHz (cellular) spectrum because TELUS is the original new entrant. In 75% of the country, TELUS and the well capitalised regional providers have all had the same one chance to acquire low band spectrum via the 2014 700 MHz auction. In this 75% of the country, TELUS is and remains a mobile challenger, competing against telco and cableco based quad-play service offerings with only its mobile service.

12. In 40% of the country, TELUS acquired a single 10 MHz block of upper 700 MHz spectrum – the exact same spectrum and same quantity that the regional providers acquired. In these markets, TELUS and the regional providers have the exact same low band holdings – no Cellular 850 and one block of upper 700 MHz spectrum. In these regions, TELUS faces a bundling disadvantage. In these regions, TELUS has negotiated access to the low band spectrum of other carriers just as regional providers\(^11\) and other national providers\(^12\) have and can do going forward. There is no logical reason that TELUS should not be given the

\(^{8}\) 20 MHz of PCS spectrum was clawed back from TELUS upon its acquisition of Clearnet in 2000. Refer to Paragraph 70 for additional detail.

\(^{9}\) All granted spectrum was received when the business case for mobile network investment was negative and the annual fees paid on all granted spectrum to date amount to roughly $8.5B in today’s dollars – hardly “free” spectrum.

\(^{10}\) That is, outside of the TELUS ILEC (Incumbent Local Exchange Carrier) territory of BC, AB and E. QC serving approximately 25% of the Canadian population.

\(^{11}\) Bell-MTS, Ecotel, Ice Wireless, SaskTel, Tbaytel, Videotron

\(^{12}\) Bell, Rogers
same privileged access to sub-GHz broadband spectrum in these regions as the regional providers. The proposed rules are unfair and ignore the imbalance in sub-GHz holdings between the national providers themselves because of their differing lineages.\(^\text{13}\)

13. In the context of TELUS bootstrapping itself into a national provider without the benefit of either sub-GHz broadband spectrum or bundling capability in its expansion territory (75% of Canada), it is clear that the regional providers are overstating both their need for 600 MHz band spectrum (incremental to their largely fallow 700 MHz holdings) and their intent to expand and compete on a facilities basis in rural territories. This is highlighted by the fact that the proposed rules provision the regional providers for more than a 500%\(^\text{14}\) market share increase on average and yet they are all demanding a 40 MHz set-aside. There appears to be no end in sight to their purported need for privileged and subsidised access to spectrum as suggested by their responses to the 5G mmWave consultation where Shaw\(^\text{15}\) and Videotron\(^\text{16}\) call for continued intervention by the Department on their behalf.

14. If the Department remains of the view that imposing market distorting measures is prudent, in spite of the well-recognised negative ramifications of past policies which distorted prices, enriched spectrum speculators and facilitated spectrum flipping, the proposed set-aside constitutes the least appropriate approach.

\(\text{a) A set-aside artificially limits supply and drives auction prices higher for the providers that the government wants to be able to reduce prices;}\)
\(\text{b) A set-aside will enable gaming by set-aside eligible bidders;}\)\(^\text{17,18}\)

\(^{13}\) TELUS is the original new entrant with very limited granted spectrum while Rogers has the most spectrum in every mainstream spectrum band in Canada, much of it granted or through windfall. Bell has been granted spectrum in most of Canada and has also received mobile spectrum through windfall.

\(^{14}\) See Paragraphs 47 and 50 in this document for additional details

\(^{15}\) Shaw Comment Submission to SLPB-001-017, Paragraph 66, “...further focused pro-competitive measures... whether ISED should adopt a cap or a set-aside should be resolved through a subsequent consultation by ISED”

\(^{16}\) Videotron Comment Submission to SLPB-001-017, Paragraph 27 translated, "... a basic statement of principle that a fair distribution... ensure equitable access”


\(^{18}\) Dippon 2017-10.
c) The proposed set-aside will provide large unjustified subsidies\(^1\) that will continue to enrich family-controlled companies; and

d) The proposed set-aside eligibility rules serve to address an imbalance between regional providers and, on average, the national providers, but ignore the imbalance in sub-GHz holdings between the national providers\(^2\).

15. While TELUS affirms its strong preference to rely on undistorted market forces, it provides the following alternatives to alleviate some of the most serious consequences of the proposed set-aside. TELUS’ proposals involving caps address the matter of fairness and provide a path forward whereby the Government’s objectives can be fulfilled without choosing winners and losers.

**Alternatives to proposed set-aside**

a) Implementing a cap instead of a set-aside creates an effective set-aside which prevents the possibility of foreclosure for regional players. A 50 MHz sub-GHz broadband spectrum cap would effectively create a 30-40 MHz set-aside for regional providers in all major markets.

b) If a set-aside is to be implemented in spite of its profound shortcomings, then to minimise the impact of picking winners and to better align with the Department’s stated objectives,

   i. The set-aside should not exceed 20 MHz (29% of the band) as a larger set-aside would provide privileged access to a block of contiguous sub-GHz spectrum the size of which no national provider holds and would disproportionately hurt\(^2\) TELUS. Setting aside 20 MHz for regional providers means the regional providers on average pass TELUS in low band holdings and can then compete with TELUS for unrestricted blocks.

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\(^1\) For example, in the 2015 AWS-3 auction with a 60% set aside where the average price of unrestricted spectrum sold for 2850% more than the average price of set-aside spectrum.

\(^2\) Rogers has almost twice as much low band spectrum as TELUS. With the proposed set-aside, every regional provider would have roughly 60% more low band spectrum in their territory than TELUS before the unrestricted blocks are considered.

\(^2\) See Paragraphs 48-50 in this document
TELUS provides further detail in its recommendation of a reduced set-aside in Paragraphs 48-50 and 86-88 of this submission.

ii. The eligibility criteria should be amended to a one size fits all approach based on pre-auction low band holdings such that providers with less than 45 MHz\(^{22}\) of sub-GHz broadband spectrum in a region are allowed to bid on the set-aside in that region so as to address the sub-GHz spectrum deficiencies of all deficient providers.

iii. Set-aside measures should be combined with a cap of 50 to 60 MHz on sub-GHz broadband spectrum holdings to help address all sub-GHz spectrum imbalances.

iv. To prevent foreclosure while relying on markets forces to a certain extent and ensuring that Canadian taxpayers are fairly compensated, the activation of any set-aside should be made conditional on exceeding a high price threshold such as, for example, $1.25 per MHz-pop\(^{23}\) or higher across the largest eight markets.

v. Simple service area subdivisions should be employed to exempt rural areas from the set-aside per Paragraphs 22-23 below.

vi. Set-aside eligible bidders should not be able to express demand for more blocks per region than non-set-aside eligible bidders can express demand for, i.e., 50 MHz assuming a 20 MHz set aside.

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\(^{22}\) The rule and specific threshold set by the FCC. The FCC set for all participants a 45 MHz Sub-GHz broadband holdings threshold per region to determine set-aside eligibility in each region which would, for example, give TELUS set-aside bidding eligibility where it has the exact same holdings as the regional providers.

\(^{23}\) The rule and specific threshold set by the FCC.
<table>
<thead>
<tr>
<th></th>
<th>Proponent(s)</th>
<th>Set-Aside</th>
<th>Cap</th>
<th>Price Distortion</th>
<th>Regional provider Sub-GHz holdings parity</th>
<th>National provider Sub-GHz holdings parity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bell, TELUS, Rogers</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Supported subject to market forces</td>
<td>Supported subject to market forces</td>
</tr>
<tr>
<td>2</td>
<td>Bell, TELUS</td>
<td>Effectively 10 MHz</td>
<td>2 Block 600 MHz band cap</td>
<td>None</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>3</td>
<td>TELUS</td>
<td>Effectively 30-40 MHz</td>
<td>50 MHz Sub-GHz broadband spectrum cap</td>
<td>None</td>
<td>Guaranteed</td>
<td>Guaranteed</td>
</tr>
<tr>
<td>4</td>
<td>Bell</td>
<td>20 MHz (but no cross-bidding)</td>
<td>None</td>
<td>Large subsidy, but no gaming</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>5</td>
<td>TELUS (fallback from 6)</td>
<td>20 MHz</td>
<td>60 MHz Sub-GHz broadband spectrum cap</td>
<td>Large subsidy, open to gaming</td>
<td>Partially guaranteed / partially subject to market forces</td>
<td>Partially guaranteed / partially subject to market forces</td>
</tr>
<tr>
<td>6</td>
<td>TELUS</td>
<td>20 MHz (but no cross-bidding)</td>
<td>60 MHz Sub-GHz broadband spectrum cap</td>
<td>Large subsidy but no gaming</td>
<td>Limited</td>
<td>Partially guaranteed / partially subject to market forces</td>
</tr>
<tr>
<td>7</td>
<td>Rogers</td>
<td>20 MHz</td>
<td>2 Block 600 MHz band cap</td>
<td>Large subsidy but no gaming</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>8</td>
<td>ISED Proposal</td>
<td>30 MHz</td>
<td>None</td>
<td>Large subsidy, open to gaming</td>
<td>Guaranteed</td>
<td>Practically unachievable</td>
</tr>
<tr>
<td>9</td>
<td>Regional Providers</td>
<td>40 MHz</td>
<td>None</td>
<td>Large subsidy, open to gaming</td>
<td>Overcorrection</td>
<td>Practically unachievable</td>
</tr>
</tbody>
</table>
16. TELUS summarises its analysis of the range of competitive measures raised in the industry responses as illustrated in Table 1. Only in scenarios numbered 1, 3, and 5 can the regional providers and national providers all attempt to rectify the imbalance in sub-GHz broadband spectrum holdings.

17. Scenario 1, which relies on market forces, is without a doubt the best choice for Canadians. Unfortunately, ISED has never run an open spectrum auction and is looking at the FCC 600 MHz forward auction where a form of set aside was used (for the first time in 21 years in the US).

18. Scenario 3 resolves all the Department’s concerns with foreclosure (real or otherwise) and is a simple and elegant solution. It does force Rogers to access 600 MHz spectrum through subordination but their October 2 response is strongly suggestive of that intent, regardless of any direct winnings in the auction (rules permitting).

19. Scenario 5 is a rational and equitable adjustment of the Department’s interventionist proposals. It still suffers from the negative side effects of gaming by set-aside eligible bidders but it reduces the set-aside to a level where regional providers (before considering open spectrum block winners) pass TELUS and match Bell; TELUS views this as an overly generous outcome, given their limited subscriber bases. The layering on of a 60 MHz sub-GHz broadband cap is a critical component in ensuring that the open blocks serve to provide the opportunity to rectify spectrum imbalances for all providers.

20. Basically, if the Department insists on implementing measures to privilege and subsidise the well-capitalised family-controlled regional providers, it cannot at the same time permit Rogers to also foreclose its national competitors – especially when, as directly expressed via its response to the Consultation, Rogers is set to benefit from the set-aside via subordination. If the Department privileges and subsidises the regional providers, it must apply a sub-GHz low broadband spectrum cap to account for the

24 Spectrum need is assessed based on subscribers per unit of spectrum.
25 In the first low band auction in Canada (700 MHz, 2014), the only way for a “Large Wireless Service Provider” to get two adjacent paired blocks was via the A & B Block combination. In all top markets, Rogers significantly outspent both TELUS and Bell to maintain its sub-GHz mobile broadband dominance conferred upon it via the original Cellular 850 grants.
imbalances in sub-GHz broadband spectrum holdings among national providers based on their respective lineages. TELUS, as the original new entrant in 75% of the country, is too important to Canadian subscribers to be structurally disadvantaged by ill-advised competitive measures.

21. Taking a closer look at the impact of a set-aside on sub-GHz broadband spectrum share, there is currently 118 MHz of sub-GHz broadband spectrum assigned in Canada. The Department has proposed to set aside 30 MHz of the 600 MHz spectrum band for regional providers. The regional providers have all called for a 40 MHz set-aside. The national providers have all called for no more than 20 MHz to be set aside, if there needs to be a set-aside at all. In Table 2, TELUS demonstrates that post set-aside / pre-auction of open 600 MHz spectrum, a 20 MHz set-aside brings the regionals into a tie for second place in low band holdings with Bell (which is excessive and unfair to TELUS), a 30 MHz set-aside leaves Bell and TELUS well behind and is extremely disruptive and a 40 MHz set-aside is a non-starter, putting the regional providers in first place in low band holdings despite their low subscriber numbers and excess capacity.

<table>
<thead>
<tr>
<th>Set-aside Size</th>
<th>Allocated Sub-GHz Spectrum (Post Set-Aside)</th>
<th>Post Set-Aside Sub-GHz Spectrum Holdings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Auction</td>
<td>118 MHz</td>
<td>40% 28% 22% 9%</td>
</tr>
<tr>
<td>20 MHz Set-Aside</td>
<td>138 MHz</td>
<td>35% 24% 19% 23%</td>
</tr>
<tr>
<td>30 MHz Set-Aside</td>
<td>148 MHz</td>
<td>32% 22% 17% 28%</td>
</tr>
<tr>
<td>40 MHz Set-Aside</td>
<td>158 MHz</td>
<td>30% 21% 16% 32%</td>
</tr>
</tbody>
</table>

Ensuring the delivery of world-class connectivity to rural Canada

22. If a set-aside is to be implemented, then in support of the goals of the Connecting Canadians and Connect to Innovate programs, TELUS proposes dividing each Tier 2 licence into two sub-licences:

   a. A sub-licence comprising the set of all Tier 4 service areas with a population centre greater than 30,000 (the “urban sub-licence”) and,
b. The complementary set of Tier 4 service areas within the Tier 2 service area being geographically divided (the “rural sub-licence” – e.g., all Tier 4 service areas without a population centre greater than 30,000), regardless of geographic contiguity.

23. Rural sub-licences should be excluded from the set-aside so that national providers with a proven desire to invest in rural areas can deliver world-class services for Canadians, as opposed to having set-aside spectrum sit fallow for 20 years in the hands of cable companies exploiting lax deployment requirements and mandated roaming.

**Auction mechanics and efficient outcomes**

24. TELUS supports in principle the employment of a combinatorial clock auction using the WARP-based activity rule, which is familiar to Canadian bidders and has straightforward constraints on bidding based on actual bidder behaviour rather than inferred preferences.

25. For the assignment stage, TELUS contends that any adopted mechanism must ensure the contiguity of awarded spectrum blocks while allowing bidders to express valuations for their block preferences, both intrinsic and in relation to others. As Rogers and TELUS have both observed and recommended, there are strong reasons to modify the assignment round such that it facilitates the efficient assignment of spectrum for the benefit of Canadians and all mobile providers as detailed in our responses to Question 6.

26. Based on the proposed rules, opening bids reflect the expected price of set-aside spectrum in over 90% of the country, where the Department’s proposals effectively pick a single regional provider as a set-aside winner. For this reason, opening bids are set too low when considering set-aside blocks. On the other hand, opening bids are set far too high to enable robust price discovery in the competitive portion of the auction. TELUS proposes the Department adjust opening bids by the measures adopted by the FCC in the U.S. 600 MHz auction. That is the Department should reduce opening bids and invoke the set-aside only when block prices exceed a specified unit price threshold such as $1.25 per MHz-pop. Alternately, TELUS recommends prohibiting set-aside eligible bidders from bidding on and distorting the price of unrestricted blocks.
27. Details supporting TELUS’ reply comments and recommendations in response to the various questions raised by the Department and comments of other respondents follow in the main body of this document.

Introduction

5G: Beyond mobile broadband

28. In its recent response to the Consultation on Releasing Millimetre Wave Spectrum to Support 5G, TELUS noted the convergence of industry views on the 5G architecture requirements that will enable the enhanced mobile broadband (eMBB) service layer. TELUS described a heterogeneous terrestrial network based on broad 3.5 GHz coverage (in urban and suburban environments) and an ultra-dense underlay utilising mmWave spectrum and offered strong support for the bold steps proposed by the Department as a way forward for the mmWave bands to help establish Canada’s early 5G leadership.

29. In the context of 5G, TELUS also points out the tremendous momentum behind 3.5 GHz as the prime 5G band below 6 GHz balancing coverage and capacity requirements. While 3GPP currently defines 30 bands\(^\text{26}\) for the initial phase of 5G standardisation to be completed in December of this year, over 45% of the currently defined multi-band transmission combinations involve the 3.5 GHz frequency range\(^\text{27}\). TELUS cannot overstate the importance of the 3.5 GHz band for early 5G deployments and urges the Department to build on its bold steps by imminently consulting on the 3.5 GHz band, thereby ensuring that Canada does not fall behind other administrations (e.g., Japan, Korea, China and many E.U. member states) that are pushing forward with 3.5 GHz for 5G.

30. When considering the target peak downlink throughput rates in excess of 20 Gbps for the eMBB use case, the characteristics of 600 MHz spectrum (relatively small bandwidth and FDD duplexing\(^\text{28}\)) make it far less effective in achieving 5G eMBB performance targets.

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\(^{26}\) 3GPP R4-1709871, Update of NR bands, September 2017.

\(^{27}\) 3GPP R4-1710082, Update of DC band combination lists, September 2017.

\(^{28}\) As paired sub-GHz FDD spectrum, the 600 MHz band will not benefit from some of the key 5G technology advances that will drive new eMBB capabilities. In TDD bands, advanced techniques such as multi-user spatial multiplexing and high resolution beamforming are made possible using near-perfect channel knowledge at the base station by
Nevertheless, TELUS believes that the 600 MHz band will have an important role to play in the 5G networks of the future.

31. Spectrum below 1 GHz in frequency, sometimes referred to as sub-GHz spectrum, is vital for the operation of mobile networks. Mid-band spectrum (such as AWS, PCS, WCS, BRS, and 3.5 GHz) and high-band spectrum (such as mmWave) is incapable of matching the ubiquitous network coverage across all 5G use cases that sub-GHz spectrum enables with its advantageous propagation and penetration characteristics. A sub-GHz network layer will therefore be critical for providing service continuity across all environments (rural, suburban, and urban) and complementing the 3.5 GHz and mmWave bands in 5G networks.

32. Another key use case envisioned for 5G is that of ultra-reliable low-latency communications (URLLC). URLLC in 5G networks will drive joint innovation between vertical industries and mobile network operators in partnerships that develop and deploy mission-critical applications spanning industrial automation, e-health, smart cities, public safety and more. Guaranteeing service continuity will be a key requirement in achieving “five nines and beyond” reliability and, once again, sub-GHz spectrum will be critical for that purpose.

33. Sub-GHz spectrum is also anticipated to play a key role in enabling the 5G use case of Massive Machine Type Communications (mMTC). This 5G use case is the evolution of the nascent Internet of Things (IoT) and is envisioned to facilitate the connectivity of billions of devices. Mobile IoT applications requiring deep indoor coverage (such as meters and sensors in basements) and extreme range (in cases of remote sensing and object tracking) can only be addressed using sub-GHz spectrum.

Why do all operators need 600 MHz spectrum?

34. While the 850 MHz (Cellular) band is also being standardised for 5G, it has currently been deployed to deliver broad coverage in GSM, HSPA and LTE networks. This use is anticipated to be sustained to some extent for the foreseeable future to serve the needs of exploiting the channel reciprocity characteristic of TDD (where channel estimates made from uplink pilot symbol transmissions can be transformed into equivalent estimates of the downlink channel). Additionally, with its longer wavelength, the 600 MHz band will be limited to lower-order (e.g., 2x2) multiple-input / multiple-output (MIMO), as the physical size of equipment makes the use of higher-order / massive MIMO infeasible.
both domestic consumers and international visitors. A smooth transition to 5G based on the 850 MHz band as its only sub-GHz spectrum would be highly disruptive.

35. The 700 MHz bands (such as 3GPP Bands 12, 13, and 17) are not in scope for early 5G standardisation. TELUS suggests that this is due to their relatively early state of deployment (at least in national service providers’ 4G LTE networks as the bands remain fallow in the hands of most regional providers in Canada); it is too early in the investment cycle to consider stranding equipment investments to repurpose the spectrum for 5G use.

36. As such, for use cases requiring sub-GHz spectrum (e.g., rural coverage and deep indoor IoT), the 600 MHz band will be the only spectrum which is both appropriate and available to support early 5G network deployments in North America. Ensuring that all operators (national and regional alike) have an opportunity to access sufficient spectrum in the 600 MHz band is critical in supporting the establishment of Canada’s 5G leadership, the development of Canada’s digital economy, and the benefit of Canadian consumers. Conversely, maintaining the proposed disproportionate 43% set-aside of the band for regional providers would be detrimental to Canadian 5G innovation. The set-aside would be particularly problematic for rural Canadians, who are highly dependent on sub-GHz spectrum to be part of the digital economy, since the Government proposes to grant it to parties that will have no obligation or incentive to deploy it until the end of the 20 year term of the licence.

37. It is in this context of 5G innovation that TELUS provides detailed responses to the questions raised by the Department in the remainder of its submission.
TELUS’ Comments on Specific Questions Posed by ISED

Q1A / Q1B / Q1C: Set-Aside Implementation, Amount, and Eligibility

Q1A—ISED is seeking comments on its proposal to implement a set-aside as a pro-competitive measure in the auction process for the 600 MHz band.
Q1B—ISED is seeking comments on its proposal to set aside 30 MHz of spectrum in the 600 MHz band for eligible entities and to have open bidding (no pro-competitive measures) on the remaining 40 MHz in the band.
Q1C—ISED is seeking comments on its proposal to limit the eligibility criteria to bid on set-aside spectrum to those registered with the CRTC as facilities-based-providers, that are not national incumbent service providers, and that are actively providing commercial telecommunication services to the general public in the licence area of interest, effective as of the date of application to participate in the 600 MHz auction.

38. TELUS was shocked to see the Department propose a set-aside of 43% (30 MHz out of 70 MHz) for regional operators in the 600 MHz band. This proposed set-aside unjustifiably maintains the trend of providing regional operators with preferred access to a disproportionate amount of spectrum, following set-asides of 44% (40 MHz out of 90 MHz) in the AWS-1 band and 60% (30 MHz out of 50 MHz) in the AWS-3 band. TELUS is amused but not surprised by the baseless recommendations of the regional providers to increase the set aside to 57% of the band. TELUS notes that in the parallel mmWave consultation process, the regional providers have filed responses which recommend that privileged access to spectrum continue to be provided in these green field bands as well. Where does it end?

39. TELUS urges the Department to give careful reconsideration to its rationale for proposing a set-aside for regional operators – particularly one of this magnitude.

   a. The set-aside eligibility rules are grossly flawed because eligibility is not based on one’s low band holdings, which disproportionately disadvantages TELUS (who has no more sub-GHz broadband spectrum than the set-aside eligible regional providers in large portions of the country).

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29 See Rogers’ initial submission, Paragraphs 37-45 and Bell’s initial submission, Paragraphs 17-30 where both Rogers and Bell provide compelling reasons to discontinue the asymmetric treatment.
b. Setting aside a block that is 30 MHz is exceptional and not justified in any way.

c. Our economic experts challenge the basis for the set-aside and we agree that there is a glaring dearth of substance backing up the need for the set-aside based on market power. Foreclosure in a blind auction with four strong players in each region seems unrealistic.

d. There is no consideration of financial strength in concluding a need to shield regional providers from market forces, especially when considering their behaviour in past auctions.

Set-aside eligibility rules are flawed

40. In 40% of the country by population (including Canada’s largest market, Southern Ontario), TELUS holds only one sub-GHz broadband spectrum licence – the same single paired block of Upper 700 MHz spectrum that the set-aside eligible regional providers hold – and no more. If the intention of the proposed set-aside is to create preferential access to sub-GHz spectrum for those who need it the most and would maximise its utilisation, TELUS would be the top pick in many parts of the country.

41. In regions where TELUS’ sub-GHz broadband spectrum holdings are identical to the proposed set-aside eligible regional operators, the rules effectively mean that TELUS’ large subscriber base should make do with its 10 MHz of sub-GHz broadband spectrum plus any of the open 40 MHz TELUS can win at auction (most likely at a steep price), while each of the regional providers can secure an additional 30 MHz at or near the reserve price. While TELUS has paid market rates for spectrum to expand beyond its original ILEC footprint of 25% of Canada and has faced the theoretical potential of foreclosure from Bell and Rogers in every mobile spectrum auction, TELUS would need to somehow foreclose one of Bell or Rogers completely, and prevent the other from acquiring a second block of spectrum (while fending off all bids from the regional providers), just to maintain low band parity in these regions with the privileged regional providers. If this wasn’t enough, the regional providers demand a 40 MHz set-aside; under that absurd scenario, even if TELUS were to succeed in foreclosing both Bell and Rogers entirely (fending off all bids potentially including gaming
bids from the regional providers) TELUS would not be able to keep up with the privileged regional providers in these regions. The proposed rules effectively pick winners and losers and are grossly unfair.

42. This is poor public policy, is contrary to international best practices and is almost certain to cause much more harm than good. The continued employment of such poor policies and their inevitable fallout will cripple innovation, undermine the development of Canada’s digital economy and constrain the development of 5G services for Canadians.

43. As TELUS has consistently brought to the Department’s attention, an operator’s relative need for additional spectrum can be estimated based on a simple comparison of spectrum utilisation (measured in subscribers per MHz-pop). Figure 1 demonstrates this relative spectrum need using the spectrum utilisation metric when considering low-band (sub-GHz) spectrum only\(^30\).

\[^{30}\] Utilisation figures are multiplied by 10,000 for scale. Detailed subscriber counts were not available on a regional basis; the divided licence areas in Ontario and Quebec therefore assume a split of subscribers in proportion to each service area’s relative population in the province.
Figure 1: Relative Spectrum Need (Subs per MHz-pop x 10,000 using Sub-GHz low-band spectrum, pre-auction)

44. Bell, SaskTel, TELUS, and Videotron are the operators in the biggest need of sub-GHz broadband spectrum, not Shaw (other than in Eastern Ontario where they do not have low band spectrum) who the Department proposes to grant essentially uncontested access to two thirds of the proposed set-aside at the reserve price. The Department must consider the needs of all Canadians, particularly in the current regime where Rogers and Shaw subscribers are so often now roaming on TELUS’ mobile network due to the arbitrage opportunity presented by overly generous mandated roaming provisions that undermine facilities based competition.

45. Rogers in its response makes a point of always referring to Bell and TELUS as a single entity (“Bell-Telus”), due to our reciprocal network access arrangements. Rogers’ Figure 2 shows the spectrum of two large carriers stacked together. The Canadian industry has
already heard these same arguments back in 2010-11 during the 700 MHz policy consultations. 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 the numerous 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. Respondents 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. As Bell states in Paragraph 66 of its response to the Consultation, operators involved in reciprocal network access arrangements must each source and bring spectrum to the table: “Entities that have demonstrated a clear intention to compete against each other in the downstream retail market are motivated to independently source and control their critical network inputs. This leads them to seek access to their own spectrum in order to meet their own subscribers' needs.”

46. TELUS takes Rogers’ Table 3, nets out the ESMR and adds spectrum utilisation metrics. As TELUS has consistently brought to the Department’s attention, an operator’s relative need for additional spectrum can be estimated based on a simple comparison of spectrum utilisation (measured in subscribers per MHz-pop).

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31 TELUS’ ESMR licences are narrowband licences not supporting HSPA, LTE or 5G without first going through a repacking process as in the U.S. involving the migration of Public Safety and legacy users to the lower portion of the ESMR band.
Table 3: Corrected Rogers Table 3 with utilisation data added:

Sub-GHz Broadband Spectrum MHz, % and Utilisation (Subscribers per Sub-GHz Broadband MHz-pop x 10,000)

<table>
<thead>
<tr>
<th>Service Area</th>
<th>Rogers</th>
<th>Bell-TELUS</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Name</td>
<td>MHz</td>
<td>%</td>
</tr>
<tr>
<td>2-001</td>
<td>NF&amp;LB</td>
<td>49</td>
<td>42%</td>
</tr>
<tr>
<td>2-002</td>
<td>NS&amp;PEI</td>
<td>49</td>
<td>42%</td>
</tr>
<tr>
<td>2-003</td>
<td>NB</td>
<td>49</td>
<td>42%</td>
</tr>
<tr>
<td>2-004</td>
<td>E. QB</td>
<td>49</td>
<td>42%</td>
</tr>
<tr>
<td>2-005</td>
<td>S. QB</td>
<td>49</td>
<td>42%</td>
</tr>
<tr>
<td>2-006</td>
<td>E. ON</td>
<td>49</td>
<td>42%</td>
</tr>
<tr>
<td>2-007</td>
<td>N. QB</td>
<td>37</td>
<td>31%</td>
</tr>
<tr>
<td>2-008</td>
<td>S. ON</td>
<td>49</td>
<td>42%</td>
</tr>
<tr>
<td>2-009</td>
<td>N. ON</td>
<td>37</td>
<td>31%</td>
</tr>
<tr>
<td>2-010</td>
<td>MB</td>
<td>37</td>
<td>31%</td>
</tr>
<tr>
<td>2-011</td>
<td>SK</td>
<td>37</td>
<td>31%</td>
</tr>
<tr>
<td>2-012</td>
<td>AB</td>
<td>49</td>
<td>42%</td>
</tr>
<tr>
<td>2-013</td>
<td>BC</td>
<td>49</td>
<td>42%</td>
</tr>
<tr>
<td>2-014</td>
<td>YK, NV, NWT</td>
<td>25</td>
<td>21%</td>
</tr>
<tr>
<td>1-001</td>
<td>Canada</td>
<td>48</td>
<td>40%</td>
</tr>
</tbody>
</table>
Table 3 shows that on a per subscriber basis, Rogers and the regional providers on average enjoy, pre-auction, a roughly 33% cushion over the utilisation that TELUS and Bell face. (Granted Eastlink, Videotron and SaskTel are closer to the neighbourhood of TELUS and Bell’s utilisation while Shaw appears to have ample spare capacity.) This table also shows that with the originally proposed set-aside ignoring TELUS’, and to a lesser extent Bell’s, sub-GHz spectrum deficiencies in certain markets, the regional providers will be provisioned for more than a 500%\(^{32}\) market share increase on average to match the utilisation of TELUS and Bell, and with a 20 MHz set-aside would be provisioned for almost a 400%\(^{33}\) increase in market share on average.

**Set-aside size not justified**

Taking a closer look at the impact of a set-aside on sub-GHz broadband spectrum share, there is currently 118 MHz of sub-GHz broadband spectrum assigned in Canada. The Department has proposed to set aside 30 MHz of the 600 MHz band for regional providers. The regional providers have all called for a 40 MHz set-aside. The national providers have all called for no more than 20 MHz to be set aside, if there needs to be a set-aside at all. From the following table, we demonstrate that post set-aside / pre-auction of open 600 MHz spectrum, a 20 MHz set-aside brings the regionals into a tie for second place in low and holdings with Bell (which is excessive and unfair to TELUS), a 30 MHz set-aside leaves Bell and TELUS well behind and is extremely disruptive and a 40 MHz set aside is a non-starter, putting the regionals in first place in low band holdings despite their low subscriber numbers and excess capacity.

**Table 4: Sub-GHz broadband spectrum shares based on various set-aside sizes**

<table>
<thead>
<tr>
<th>Set-aside Size</th>
<th>Allocated Sub-GHz Spectrum (Post-Set-aside)</th>
<th>Post-Set-aside Sub-GHz Spectrum Holdings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rogers</td>
</tr>
<tr>
<td>Pre-Auction</td>
<td>118 MHz</td>
<td>40%</td>
</tr>
<tr>
<td>20 MHz Set-Aside</td>
<td>138 MHz</td>
<td>35%</td>
</tr>
<tr>
<td>30 MHz Set-Aside</td>
<td>148 MHz</td>
<td>32%</td>
</tr>
<tr>
<td>40 MHz Set-Aside</td>
<td>158 MHz</td>
<td>30%</td>
</tr>
</tbody>
</table>

\(^{32}\) Per Table 3, with a 30 MHz set-aside, on average, regional providers have a utilisation of 16 compared to TELUS and Bell at 84 subscribers per MHz-pop of sub-GHz broadband spectrum (divided by 10,000).

\(^{33}\) Per Table 3, with a 20 MHz set-aside, on average, regional providers would have a utilisation of 22 compared to TELUS and Bell at 84 subscribers per MHz-pop of sub-GHz broadband spectrum (divided by 10,000).
49. On a net basis (i.e., considering only spectrum which can be deployed for LTE broadband today, which excludes guard bands, the 850 MHz A’/B’ blocks, and considers only 5+5 MHz block components in the Lower 700 MHz band), an even more revealing view shows how 20 MHz is more than a sufficient set-aside for well-established, well-capitalised regional providers. Put into terms of simple spectrum blocks, a 40 MHz set-aside gives the regional providers access to five paired blocks of 5+5 MHz – more than even Rogers with four paired blocks. When the number of subscribers that these networks each support is factored in, this is extremely disruptive to mainstream Canadian subscribers and counteracts the national providers’ ability to lower prices. Both Bell and TELUS are left behind even with a 20 MHz set aside (even before considering subscriber loads). This is further exacerbated by the fact (not shown in the table) that roughly 17% of the holdings of Bell and TELUS are unpaired blocks of 700 MHz spectrum that can only currently be aggregated with mid band spectrum, making them effectively mid band holdings and not sub-GHz holdings.

Table 5: Sub-GHz broadband spectrum shares based on various set-aside sizes (net usable for LTE broadband)

<table>
<thead>
<tr>
<th>Set-aside Size</th>
<th>Allocated Sub-GHz Spectrum (Post-Set-aside)</th>
<th>Post-Set-aside Sub-GHz Spectrum Holdings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Auction</td>
<td>100 MHz</td>
<td>Rogers 39%  Bell 28%  TELUS 22%  Regionals 11%</td>
</tr>
<tr>
<td>20 MHz Set-Aside</td>
<td>120 MHz</td>
<td>Rogers 32%  Bell 23%  TELUS 18%  Regionals 26%</td>
</tr>
<tr>
<td>30 MHz Set-Aside</td>
<td>130 MHz</td>
<td>Rogers 30%  Bell 22%  TELUS 17%  Regionals 32%</td>
</tr>
<tr>
<td>40 MHz Set-Aside</td>
<td>140 MHz</td>
<td>Rogers 28%  Bell 20%  TELUS 16%  Regionals 36%</td>
</tr>
</tbody>
</table>

50. Considering the full 70 MHz up for auction, Table 6 shows a number of representative scenarios of potential outcomes (on a national average basis and ignoring regional variations). Post-auction spectrum shares as well as post-auction spectrum utilisations (in terms of subscribers per MHz-pop of sub-GHz spectrum) are shown for the various outcomes in terms of number of blocks won. We have purposely suppressed any set-aside information because the proposed rules allow the financially strong regional providers to bid on the open spectrum. All of these scenarios are plausible with a 20 MHz set-aside. In the very worst case for regional providers, they still maintain a massive spare capacity cushion to grow their subscriber bases and as noted previously, between 400% and 500%
subscriber growth headroom in terms of the current utilisation when compared to the more heavily utilised national provider networks. A 20 MHz set aside is not fully justified on this basis and anything more than a 20 MHz set-aside would be extremely disruptive to Canadian mobile subscribers.

Table 6: Potential scenarios with post-auction spectrum shares and utilisation

<table>
<thead>
<tr>
<th>Blocks Won (R,B,T,Regional)</th>
<th>Rogers Spectrum Share</th>
<th>Rogers Utilisation</th>
<th>Bell Spectrum Share</th>
<th>Bell Utilisation</th>
<th>TELUS Spectrum Share</th>
<th>TELUS Utilisation</th>
<th>Regionals Spectrum Share</th>
<th>Regionals Utilisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 2, 2</td>
<td>31%</td>
<td>51</td>
<td>28%</td>
<td>48</td>
<td>24%</td>
<td>53</td>
<td>17%</td>
<td>26</td>
</tr>
<tr>
<td>2, 1, 2, 2</td>
<td>36%</td>
<td>43</td>
<td>23%</td>
<td>59</td>
<td>24%</td>
<td>53</td>
<td>17%</td>
<td>26</td>
</tr>
<tr>
<td>2, 2, 1, 2</td>
<td>36%</td>
<td>43</td>
<td>28%</td>
<td>48</td>
<td>19%</td>
<td>68</td>
<td>17%</td>
<td>26</td>
</tr>
<tr>
<td>1, 1, 2, 3</td>
<td>31%</td>
<td>51</td>
<td>23%</td>
<td>59</td>
<td>24%</td>
<td>53</td>
<td>22%</td>
<td>19</td>
</tr>
<tr>
<td>2, 1, 1, 3</td>
<td>36%</td>
<td>43</td>
<td>23%</td>
<td>59</td>
<td>19%</td>
<td>68</td>
<td>22%</td>
<td>19</td>
</tr>
<tr>
<td>1, 2, 1, 3</td>
<td>31%</td>
<td>51</td>
<td>28%</td>
<td>48</td>
<td>19%</td>
<td>68</td>
<td>22%</td>
<td>19</td>
</tr>
<tr>
<td>1, 1, 1, 4</td>
<td>31%</td>
<td>51</td>
<td>23%</td>
<td>59</td>
<td>19%</td>
<td>68</td>
<td>27%</td>
<td>16</td>
</tr>
</tbody>
</table>

51. In the remainder of this section, TELUS recommends and justifies modifications to the Departments proposed “pro-competitive measures” and suggests alternatives that provide a fair and equitable opportunity for all operators (both national and regional alike) to acquire spectrum in the 600 MHz band.

A set-aside is not required

52. When a set-aside was adopted in the 2008 AWS-1 auction, the Department aimed to create incentives for new competitors to enter the mobile wireless marketplace. Basically no organizations other than Rogers and the ILECs had mobile spectrum. The Department imposed mandated tower sharing and mandated roaming on the national providers as further incentive to enter the market via the AWS-1 auction. NERA produced a report\(^\text{34}\) in 2009 outlining the gaming, outlier pricing and problems with set-asides.

\(^{34}\) Dippon 2009.
53. The wireless market is markedly different today than in 2008. After nearly a decade of set-asides and caps (i.e., effective set-asides) amounting to roughly $8B\textsuperscript{35} in taxpayer funded spectrum subsidies, the “challenger” market has consolidated down to one strong, stable and mature cable incumbent providing facilities-based mobile service in almost every region to round out a vibrant four player market. There no longer is any significant risk endangering regional operators who now have a stable mobile extension to their TV, HSIA and home phone product lines. They are now capable of and should be paying the going rate and competing without privilege.

54. NERA produced a report\textsuperscript{36} analysing the need for the proposed 600 MHz set-aside and in the view of NERA Economic Consulting expert Christian Dippon:

\textit{Fundamentally, the evidence in this matter does not support the introduction of pro-competitive measures in the upcoming 600 MHz auction. The Canadian marketplace for wireless service is competitive. Facilities-based nationwide and regional providers compete for subscribers in a saturated market by employing the latest technology and offering ubiquitous nationwide coverage, thus yielding some of the world’s highest long-term evolution (LTE) penetration rates. There is no evidence of market power, and ISED must weigh the 2014 claim by the Competition Bureau against the vast contemporaneous evidence demonstrating the opposite. Additionally, set-asides restrict spectrum supply to non-eligible providers and open these bidders up to fake bidding (instances where eligible providers drive up the spectrum costs for non-eligible bidders). Thus, set-asides are not simply superfluous but seriously harmful. On this finding alone, I recommend against the adoption of this proposed putatively pro-competitive measure.}

55. NERA Economic Consulting expert Jeffrey Eisenach notes\textsuperscript{37}:

a. North American markets continue to outperform those in the EU, especially in terms of availability and uptake of advanced LTE networks and associated increase in usage of data-intensive services.

\textsuperscript{35} Bell notes $4B but that does not include the 40 MHz of AWS-4 ATC spectrum granted in 2015
\textsuperscript{36} Dippon 2017-10.
b. The strong relative performance of the Canadian mobile wireless market is even more impressive when viewed in the context of cost-factors which place Canada at a distinct disadvantage. These factors include Canada’s extremely low population density, the relatively small size of Canadian mobile operators (and resulting lack of economies of scale), and high government-imposed costs. In particular, Canadian operators pay among some of the highest prices in the world for both spectrum licenses and spectrum fees.

c. The Canadian market is among the least concentrated in the world, as measured by the Herfindahl-Hirschman Index (HHI), and that concentration is declining.

d. Growing output, declining prices, rapid innovation and extensive product differentiation and consumer choice in the Canadian mobile wireless market are inconsistent with the existence of monopoly power and instead indicate the presence of robust competition that forces operators to improve their offerings while cutting costs and lowering prices.

e. The Nordicity Report commissioned by the government in 2016, which purports to compare Canadian mobile wireless prices to those in other countries, suffers from fundamental methodological flaws and is systematically biased.

f. The available evidence fails to support, and in general contradicts, concerns about adoption and affordability. The evidence demonstrates that, even ignoring improvements in network speed and availability, prices for the services purchased by most consumers are falling rapidly.

g. International evidence on the rate of smartphone adoption by those with low incomes as compared with the more affluent shows that Canada is a leader, not a laggard in making high quality mobile broadband connections available to low income citizens.

56. All of Canada’s mobile operators (both national and regional) are well capitalised, deliver quad plays in their incumbent territory, have similar net debt to EBITDA ratios (i.e., have similarly levered balance sheets) and drive roughly the same normalised operating cashflow
(EBITDA per pop in their operating territory) – see Table 7 below. As such all of Canada’s operators are equally matched and capable to compete in an open auction.

Table 7: Operating cashflow, leverage and unit cost at auction

<table>
<thead>
<tr>
<th></th>
<th>EBITDA (TTM 2nd Qtr 2017) ($M)</th>
<th>EBITDA %</th>
<th>Net Debt / EBITDA</th>
<th>Pops (M)</th>
<th>Average Auction Cost 2008-2015 ($ / MHz-pop)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TELUS</td>
<td>4,098</td>
<td>31.6%</td>
<td>3.2x</td>
<td>33.5</td>
<td>1.32</td>
</tr>
<tr>
<td>Bell</td>
<td>8,318</td>
<td>37.5%</td>
<td>2.7x</td>
<td>33.5</td>
<td>1.27</td>
</tr>
<tr>
<td>Rogers</td>
<td>5,144</td>
<td>36.9%</td>
<td>3.3x</td>
<td>33.5</td>
<td>2.59</td>
</tr>
<tr>
<td>Quebecor</td>
<td>1,447</td>
<td>35.5%</td>
<td>3.0x</td>
<td>9.1</td>
<td>0.82</td>
</tr>
<tr>
<td>Shaw</td>
<td>2,095</td>
<td>40.0%</td>
<td>2.6x</td>
<td>21.3</td>
<td>0.61</td>
</tr>
<tr>
<td>Eastlink</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>3.1</td>
<td>0.21</td>
</tr>
</tbody>
</table>

57. TELUS has asked NERA Economic Consulting to provide an arm’s length review\(^{39}\) of the consultation and comment on questions 1A, 1B, 1C and 1D and this paper has been filed with TELUS’ submission. NERA provides a thorough analysis and concludes that there is no evidence of market power. Their conclusions build on their work filed as part the CRTC proceeding 2017-259. NERA has concluded that a set-aside or cap is unwarranted and that at best ISED should be offering any entity viewed as a necessary beneficiary of pro-competitive measures (e.g., small companies) bidder credits instead. NERA does not suggest these bidder credits for Canada’s cable conglomerates. TELUS shares NERA’s view on this latter point, based on the evidence provided above in Paragraph 54 and in Table 7. However, while TELUS is opposed to providing preferential measures to the well-

\(^{38}\) Excludes debt raised to buy back shares from CDP Capital in 2012 and 2015. Inclusive of that debt, Quebecor’s Net Debt / EBITDA ratio is 4.0x.

\(^{39}\) Dippon 2017-10.
capitalised cable conglomerates, TELUS accepts that a direct subsidy (via bidder credits) would be far less damaging than a set-aside.

58. Once initial comments were posted, TELUS asked NERA Economic Consulting to provide an arm’s length review of the input that ISED had received\(^40\).

I have carefully examined the comments about competition and the alleged need for set-asides and found them to be inconsistent with sound economic principles and public policy. None of the Other Respondents conducted a competition analysis despite agreeing that lack of competition is a prerequisite for set-asides. The anecdotal evidence and incorrect claims submitted in lieu of a competition analysis are insufficient to warrant any procompetitive measures.

The Other Respondents’ comments also reveal a fundamental misunderstanding of the objective of set-asides. The objective of this and other procompetitive measures is not to enrich the bottom line of an eligible provider or to ensure that it has the same amount of spectrum as others. It also does not ensure that all eligible bidders will win spectrum. Rather, it ensures that no bidder increases its maximum willingness to pay simply to keep others out, thereby enabling it to charge supracompetitive rates in the post-auction market. In short, set-asides are to protect Canadian consumers, not the profitability of any particular bidder. Seemingly not understanding the objective of set-asides, the Other Respondents argue that they deserve the spectrum as they have less low-frequency spectrum than others do, that they do not have the financial resources of the nationwide providers, and that they need to be protected against “the incumbents.” Interestingly, other than stating that regional providers have provided consumers benefits in the past, the Other Respondents offer no meaningful evidence that the benefits from set-asides in the upcoming 600 MHz auction would flow through to Canadian consumers

A set-aside is not advisable

59. When the Department first implemented a set-aside as a “pro-competitive” measure in the 2008 AWS-1 auction, it presumably did not envision the unintended consequences: gaming bids from set-aside eligible bidders\(^41\); the indirect cost to consumers of higher spectrum prices; spectrum going unused or underutilised for many years; and spectrum flipping that directly profited the shareholders of family controlled companies. These were all paid for by society at large.

\(^40\) Dippon 2017-11.
\(^41\) Dippon 2009.
In their current form, the Department’s proposals provide low risk gaming opportunities for set-aside eligible bidders that will cause material harm. For this reason, set-aside eligible bidders must not be able to bid outside of a set-aside. Set-asides have repeatedly proven to distort post-market outcomes and result in the inefficient utilisation of spectrum. Public historical bidding data provides strong evidence of malicious bidding behaviour in the 2008 AWS-1 auction. The auction of unrestricted AWS-1 spectrum effectively ended in round 23 and for an astounding 308 additional rounds, the set-aside eligible bidders including the proposed 600 MHz set-aside eligible bidders Eastlink, Videotron and Shaw displayed some of the most blatant examples of gaming behaviour on the global spectrum auction record by deliberately and systematically pushing open spectrum prices up in each of the service areas in Canada.

Table 8 highlights the extent of the gaming activity in the AWS-1 auction as demonstrated by the intended beneficiaries of the proposed set-aside in the 600 MHz auction. Column (a) highlights the ratio of peak bid (the most money they put on the line in any round) to actual end purchase on spectrum. No bidder came close to being as brazen as Bragg (Eastlink) who placed bids 10 times higher than its final spend. Column (b) shows the percentage premium entrants were willing to bid on open spectrum blocks versus the going price for the equivalent set-aside blocks. All of the intended beneficiaries of the proposed 600 MHz set-aside were active in this regard and it shows how far entrants were willing to go to game the auction. Column (c) shows the spectrum flipping profits realised by large cable companies that the Department intends to be the beneficiaries of the proposed 600 MHz set-aside. Column (d) shows how two likely beneficiaries of the proposed 600 MHz set-aside have not yet actually put to use the low band spectrum they already acquired via privileged access in 2014.

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42 Ibid.
43 As per AWS-1 bid data.
Table 8: Bidding behaviour, spectrum flipping and sub-GHz deployment of proposed set-aside eligible bidders

<table>
<thead>
<tr>
<th>Bidder</th>
<th>(a) AWS-1 peak bid to ending spend</th>
<th>(b) AWS-1 most uneconomic bid</th>
<th>(c) AWS-1, MBS, BRS flipping profits</th>
<th>(d) 700 MHz sites deployed$^{44}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastlink</td>
<td>10x</td>
<td>805%$^{45}$</td>
<td>n/a</td>
<td>308</td>
</tr>
<tr>
<td>Shaw</td>
<td>2.5x</td>
<td>162%$^{46}$</td>
<td>$162M</td>
<td>0</td>
</tr>
<tr>
<td>Wind</td>
<td>1.75x</td>
<td>1,060%$^{47}$</td>
<td>$45M</td>
<td></td>
</tr>
<tr>
<td>Videotron</td>
<td>1.25x</td>
<td>1,110%$^{48}$</td>
<td>$261M</td>
<td>0</td>
</tr>
<tr>
<td>National providers</td>
<td>1x</td>
<td>n/a</td>
<td>Rogers but not TELUS allowed to acquire half the AWS-1 set-aside in BC, AB and S. ON</td>
<td>11,741</td>
</tr>
</tbody>
</table>

62. In the 2008 AWS-1 auction, Videotron foreclosed the entire three block 40 MHz set-aside in every service area in Quebec. Videotron also outbid Bell for unrestricted spectrum (i.e., three national providers and three open blocks but only TELUS and Rogers won a block) in part of Quebec. In this area, Videotron acquired more AWS-1 spectrum than all three national incumbents combined (50 MHz vs 40 MHz total for Rogers and TELUS). Clearly, Videotron did not need a set aside back in 2008. Since 2008, Quebecor’s stock price has appreciated by 164%, more than three times the average stock appreciation rate of its competitors. Today, like TELUS, Videotron has negotiated subordination rights to address its current sub-GHz deficiencies$^{49}$. There is no policy rationale to have Videotron bidding

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$^{44}$ Based on data from the Department’s Spectrum Management System as of October 2, 2017
$^{45}$ Round 177
$^{46}$ Round 138
$^{47}$ Round 125
$^{48}$ Round 126
with special privileges and subsidy. And if there is, why wouldn’t these benefits be applied to TELUS where it is deficient in sub-GHz broadband spectrum?

63. The public record shows that Shaw has vacillated for more than two decades on its mobile strategy, investing and exiting twice before buying Wind in 2016. That was not the result of any regulatory impediment – it was the result of choices Shaw made. Despite this serial indecision, Shaw has the temerity to suggest that it knows how TELUS and other national providers value 600 MHz spectrum on a marginal utility basis.

64. TELUS and Shaw have the same sub-GHz broadband spectrum in Canada’s largest market, Southern Ontario, where they are both mobile challengers. There is no policy rationale to have Shaw bidding with special privileges and subsidy in Southern Ontario. And if there is, these benefits should be equally applied to TELUS. When considering the entry of telcos into the high-speed broadband access and television services markets this millennium, at great capital expense, it is worth noting that there was absolutely no government subsidy provided to telcos creating competition and delivering innovative services that have forced cablecos to update their offerings. The government has seen fit to provide no subsidy for telcos to break up the cable monopoly whose pricing still tracks well above the CPI, but is compelled to underwrite the entry of a fourth mobile provider in every region despite the rapid and ongoing price declines in mobile services (offset by a massive increase in consumption leading to stable ARPU).

65. Underlying the market with four strong companies providing mobile service in every major market are two large wireline HSIA providers in each region - one telco copper/fibre provider and one coax/fibre provider. TELUS notes that Rogers was approved to acquire half of the AWS-1 set-aside spectrum in two thirds of the country in 2015 and 2017 via deals with cable based regional wireless providers. The public record also shows

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50 Per the public record and Rogers’ Reply Comments on the BRS Consultation on Policy and Technical Framework, Quebecor Media (Quebecor) and Shaw each partly owned Microcell in its early days. In July 1995, both companies were reported to have increased their respective ownership stakes in Microcell to 10% with an option to increase their stakes to 15%. However, in March 1998, Shaw decided to sell its 10% stake for a profit of $11.6 million, saying that the sale would allow Shaw to focus on its core operations. Quebecor attempted to sell its stake in Microcell but they were unsuccessful and eventually wrote-down their investment in 2002. Shaw spent $190M in the 2008 AWS-1 auction but agreed in 2013 to sell this spectrum to Rogers, which it did in 2015.
subordination agreements in place between Rogers and Videotron with respect to AWS-1 and 700 MHz spectrum. Historical factors and new 5G technology and market forces may drive Rogers to eventually partner with all or most of the regional cableco mobile providers\textsuperscript{51} versus relying on wireless backhaul, mandated fibre access and/or extensive out-of-cable-footprint fibre investment to deliver 5G services. TELUS contends that the alleged “pro-competitive” measures proposed by the Department therefore are likely to benefit Rogers in addition to the regional providers in spite of Rogers already having been given privileged access to the largest amounts of spectrum in almost every mainstream band in Canada including sub-GHz spectrum.

66. Table 9 shows privileged and subsidised access to spectrum by band by operator. Within each band it shows the quantity of national MHz (for comparability) that each major mobile provider has had privileged and/or subsidised access to. The table highlights how TELUS’ lineage as the original new entrant and the only still standing company to ever create new competition in the history of the Canadian mobile industry, without being provided lucrative incentives and subsidies to do so, has yet to receive balancing treatment from the Department.

67. Line (1) in the table shows the size of the original 850 grants in terms of national MHz. Line (2) similarly shows the 1995 PCS grants. The beneficiaries of these grants have paid $3.5B in spectrum fees over the lifespan of these licences (over $8.5B in terms of 2017 dollars)\textsuperscript{52}. The table clearly illustrates the scale of the benefit Rogers received in comparison to other providers.

68. Note that Rogers and TELUS bought PCS spectrum previously granted in 1995 from Microcell and Clearnet but paid for this spectrum in open secondary market transactions and as such, this PCS spectrum is not included in the table just as none of the recent secondary market transactions are included.

\textsuperscript{51} The regional providers all hold underutilised spectrum and have fibre assets in their territories which are outside Rogers’ hybrid fibre/coax network footprint.

\textsuperscript{52} Mark Goldberg, \textit{Two Sides of Every Coin}, \url{http://mhgoldberg.com/blog/?p=1157}
69. Line (3) shows the effect of the only clawback of mobile spectrum in Canadian history related to the 20 MHz of PCS that was clawed back from TELUS when TELUS acquired Clearnet in 2000. In January 2001, the Department turned around and auctioned this spectrum creating 60 MHz of supply in regions where TELUS had been stripped of 20 MHz in BC, Alberta and Eastern Quebec. TELUS could not bid to buy it back due to the cap in place. Bell and Rogers could only buy a subset of the available six blocks (due to the cap) but were able to acquire it at 16 cents per MHz-pop (just over the reserve price) while TELUS, Rogers and Bell spent close to $4 per MHz-pop fighting over four blocks in Southern Ontario. Speculator W2N Inc. was able to acquire the remaining spectrum clawed back from TELUS in BC and Alberta at 16 cents per MHz-pop (just over the reserve price).

70. Line (4) shows the quantity of national MHz that the AWS-1 entrants were able to acquire with privileged access and a taxpayer subsidy.

71. Line (5) shows the quantity of national MHz of mobile 2500 MHz spectrum that Bell and Rogers received as part of a windfall associated with the fundamental reallocation of fixed service MCS and MDS licences to mobile service.

72. Line (7) shows the quantity of national MHz of AWS-3 spectrum that the operating entrants were able to acquire with privileged access and a taxpayer subsidy. This “auction” (which was for all intents and purposes was a grant, since the rules ensured that there was no competitive bidding for the set-aside except in one service area), saw the operating entrants pay on average 11 cents per MHz-pop while national providers paid $3 per MHz-pop (almost 30x more.) It is worth noting that the price the operating entrants got away with is essentially equivalent to 70% off a free grant of spectrum. A cost-free grant of spectrum attracting standard annual mobile spectrum licence fees would have cost the operating entrants over time, almost three times what they paid at auction. Once again taxpayers were

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53 Note: There was a clawback of fixed 2500 MHz band spectrum but this was related to a mobile conversion windfall which saw billions of dollars in value transferred from the Canadian taxpayer to Rogers and Bell. There will be another clawback of fixed 3500 MHz band spectrum in the future, but again this relates to a mobile conversion windfall which will see billions of dollars in value transferred from the Canadian taxpayer to Rogers, Bell and to a much lesser extent Xplornet.
forced to give up the general revenues while the benefits accrued to family controlled businesses.

### Table 9: Privileged and subsidised access to spectrum in Canada (National MHz attributed using 2016 population)

<table>
<thead>
<tr>
<th>Year</th>
<th>Band</th>
<th>Rogers</th>
<th>Bell</th>
<th>TELUS</th>
<th>Shaw/Wind</th>
<th>Videotron</th>
<th>Eastlink</th>
<th>SaskTel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Grant 1985</td>
<td>850</td>
<td>25</td>
<td>16</td>
<td>6.4</td>
<td>0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Grant 1995</td>
<td>PCS</td>
<td>10&lt;sup&gt;55&lt;/sup&gt;</td>
<td>7</td>
<td>2.5&lt;sup&gt;56&lt;/sup&gt;</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Clawback 2001</td>
<td>PCS</td>
<td>5</td>
<td>6</td>
<td>-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Set-aside 2008</td>
<td>AWS-1</td>
<td>0&lt;sup&gt;57&lt;/sup&gt;</td>
<td>17</td>
<td>7</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Windfall 2011</td>
<td>BRS</td>
<td>49</td>
<td>49</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Cap 2014</td>
<td>700</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Set aside 2015</td>
<td>AWS-3</td>
<td>16</td>
<td>9</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Cap 2015</td>
<td>BRS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>[Set-aside]</td>
<td>TBA</td>
<td>600</td>
<td>[18]</td>
<td>[9]</td>
<td>[1]</td>
<td>[1]</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Windfall TBA</td>
<td>3500</td>
<td>TBA</td>
<td>TBA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Total National MHz</td>
<td>89</td>
<td>78</td>
<td>4</td>
<td>51</td>
<td>25</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>In-territory MHz</td>
<td>89</td>
<td>78</td>
<td>4</td>
<td>83</td>
<td>85</td>
<td>90</td>
<td>130</td>
</tr>
</tbody>
</table>

73. The above table and descriptive paragraphs illustrate the fact that all providers have been generously supported other than one - TELUS. Despite this, the Department has so far ill-advisedly proposed to ignore the needs of TELUS.

**If implementing allegedly “pro-competitive” measures, use a cap instead of a set-aside**

74. If the Department proceeds with imposing allegedly “pro-competitive” measures in spite of the compelling arguments to the contrary, implementing an operator neutral band cap or sub-GHz broadband spectrum cap, rather than a set-aside, would circumvent many of the shortcomings of the proposed set-aside (e.g., low band structural advantage, unjustified subsidy and gaming opportunities, as described above) while still providing an effective set-aside.

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<sup>54</sup> Although Shaw’s acquisition of Wind was a secondary-market transaction, it was a privileged transaction

<sup>55</sup> Rogers acquired Microcell in 2004, including 30 MHz of granted PCS spectrum

<sup>56</sup> TELUS acquired Clearnet in 2000, including 30 MHz of granted PCS spectrum of which 20 MHz was clawed back in TELUS’ ILEC territories.

<sup>57</sup> Rogers acquired 20 MHz of AWS-1 set aside spectrum in most of Canada’s top markets from Mobilicity, Wind and Shaw via a series of orchestrated transactions as well as from Videotron.
A band cap creates an effective set-aside

75. A two block band cap would guarantee four winners and create an effective set-aside of 10 MHz. This would mirror the competitive measures the Department implemented in the 2015 auction of BRS spectrum where there were, like the 600 MHz band, seven paired blocks and no operator able to acquire more than two paired blocks. A two block cap ensures that at a minimum, a regional provider would win a single block at the reserve price except in a few service areas where two regional providers might bid against each other. Regional providers, all well capitalised cable conglomerates or government telcos, would be free to bid to win a second block. Such an approach would address foreclosure concerns in an equitable way.

A sub-GHz broadband spectrum cap recognises the low band deficiencies of all operators

76. The proposed set-aside seeks to address an imbalance in sub-GHz broadband spectrum holdings between the national providers and regional providers, but it fails to address the imbalance in sub-GHz broadband spectrum holdings among the national providers and the ongoing theoretical foreclosure risk faced by TELUS, the original new entrant and the national provider with the lowest ex-ante sub-GHz broadband spectrum holdings.

77. A 50 MHz sub-GHz broadband spectrum cap would resolve this legacy imbalance while effectively enforcing a 30-40 MHz set-aside for regional providers in all major markets. It would however, keep Rogers out of most of the auction and render them dependent, for 600 MHz spectrum, on future subordination or secondary market spectrum acquisition after five years.

78. Table 10 illustrates the ex-ante sub-GHz broadband spectrum holdings of the national and regional providers. TELUS’ sub-GHz broadband spectrum holdings in six of the fourteen Tier 2 service areas are identical to that of the regional operator – a single 10 MHz paired block of Upper 700 MHz spectrum. One of these regions (Southern Ontario) is the largest Tier 2 service area by population, and is an area where TELUS is competing aggressively.

58 These figures (i) include gross holdings (i.e., all guard bands), (ii) include unpaired 700 with currently only a CA profile with mid band spectrum and hence effectively mid band spectrum, (iii) exclude narrowband ESMR spectrum licences
for market share. Even in areas where TELUS bid to acquire more than a single block in the 700 MHz auction (e.g., much of Quebec and Eastern Ontario), TELUS’ sub-GHz broadband spectrum holdings are still far lower than those of Rogers (with a national 25 MHz 850A block) and Bell (with the 25 MHz 850B block in those ILEC regions).

79. It is also worth noting that on top of Rogers’ significant lead in low band quantity, Rogers also has a significant lead in low band contiguity / quality. During the 700 MHz auction in 2014, Rogers outspent the next highest bidder (TELUS) by a factor of nearly three, spending $3.3B to outbid TELUS in acquiring two contiguous paired blocks of spectrum in all of the top six markets. The proposed 600 MHz auction rules give Rogers the ability to continue to outbid TELUS to maintain Rogers’ sub-GHz advantage of twice as much as TELUS, while providing an immediate avenue to negotiate subordinated access to the proposed 30 MHz set-aside nationally. Thus, the merit in a 50 MHz sub-GHz broadband spectrum cap is both apparent and justified.

Table 10: Ex-ante sub-GHz broadband spectrum holdings

<table>
<thead>
<tr>
<th>Tier 2 Service Area</th>
<th>Service Area Name</th>
<th>TELUS</th>
<th>Rogers</th>
<th>Bell</th>
<th>SaskTel</th>
<th>Shaw</th>
<th>Videotron</th>
<th>Eastlink</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-001</td>
<td>Newfoundland and Labrador</td>
<td>10.0</td>
<td>49.0</td>
<td>49.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10.0</td>
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<tr>
<td>2-002</td>
<td>Nova Scotia and Prince Edward Island</td>
<td>10.0</td>
<td>49.0</td>
<td>49.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10.0</td>
</tr>
<tr>
<td>2-003</td>
<td>New Brunswick</td>
<td>10.0</td>
<td>49.0</td>
<td>49.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10.0</td>
</tr>
<tr>
<td>2-004</td>
<td>Eastern Quebec</td>
<td>31.5</td>
<td>49.0</td>
<td>26.6</td>
<td>-</td>
<td>-</td>
<td>10.0</td>
<td>-</td>
</tr>
<tr>
<td>2-005</td>
<td>Southern Quebec</td>
<td>24.3</td>
<td>49.0</td>
<td>34.7</td>
<td>-</td>
<td>-</td>
<td>10.0</td>
<td>-</td>
</tr>
<tr>
<td>2-006</td>
<td>Eastern Ontario and Outaouais</td>
<td>24.0</td>
<td>49.0</td>
<td>35.0</td>
<td>-</td>
<td>-</td>
<td>10.0</td>
<td>-</td>
</tr>
<tr>
<td>2-007</td>
<td>Northern Quebec</td>
<td>10.0</td>
<td>37.0</td>
<td>36.0</td>
<td>-</td>
<td>-</td>
<td>10.0</td>
<td>-</td>
</tr>
<tr>
<td>2-008</td>
<td>Southern Ontario</td>
<td>10.0</td>
<td>49.0</td>
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<td>10.0</td>
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<td>-</td>
</tr>
<tr>
<td>2-009</td>
<td>Northern Ontario</td>
<td>10.0</td>
<td>37.0</td>
<td>57.1</td>
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<td>-</td>
<td>-</td>
<td>10.0</td>
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<td>Manitoba</td>
<td>36.0</td>
<td>37.0</td>
<td>35.0</td>
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<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2-011</td>
<td>Saskatchewan</td>
<td>36.0</td>
<td>37.0</td>
<td>10.0</td>
<td>35.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
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<td>2-012</td>
<td>Alberta</td>
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<td>10.0</td>
<td>0.3</td>
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<td>-</td>
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<tr>
<td>2-013</td>
<td>British Columbia</td>
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<td>10.0</td>
<td>-</td>
<td>10.0</td>
<td>-</td>
<td>-</td>
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<tr>
<td>2-014</td>
<td>Yukon, Nunavut, NWT</td>
<td>12.0</td>
<td>25.0</td>
<td>61.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Table 11: Number of blocks each bidder could bid on under 50 MHz sub-GHz spectrum cap

<table>
<thead>
<tr>
<th>Tier 2 Service Area</th>
<th>Service Area Name</th>
<th>TELUS</th>
<th>Rogers</th>
<th>Bell</th>
<th>Max Blocks to National Providers</th>
<th>Effective Set-Aside Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-001</td>
<td>Newfoundland and Labrador</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>2-002</td>
<td>Nova Scotia and Prince Edward Island</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>3</td>
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<td>2-003</td>
<td>New Brunswick</td>
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<td>0</td>
<td>0</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
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<td>Eastern Quebec</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2-005</td>
<td>Southern Quebec</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2-006</td>
<td>Eastern Ontario and Outaouais</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2-007</td>
<td>Northern Quebec</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>2-008</td>
<td>Southern Ontario</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>2-009</td>
<td>Northern Ontario</td>
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<td>1</td>
<td>0</td>
<td>5</td>
<td>2</td>
</tr>
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<td>2-010</td>
<td>Manitoba</td>
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<td>4</td>
</tr>
<tr>
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<tr>
<td>2-014</td>
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<td>3</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

80. Table 11 illustrates the number of 5+5 MHz paired FDD blocks that each bidder could potentially access in an auction with a 50 MHz sub-GHz spectrum cap. Note that in all major markets, the three national operators (TELUS, Bell, and Rogers) are only able to cumulatively bid on at most four blocks (Northern Quebec, Northern Ontario, Saskatchewan and Northern Canada are the only exceptions). This proposal illustrates that in adopting a 50 MHz sub-GHz broadband spectrum cap, the Department would be enforcing an effective set-aside of 30 MHz in most major markets and a 40 MHz effective set-aside in Manitoba, Eastern Ontario, and the highly populated regions of Quebec.

If set-aside persists then TELUS strongly recommends changes

81. While TELUS strongly believes that caps are much less distortionary and damaging than set-asides, TELUS proposes that if the Department insists on implementing a set-aside and accepts the consequences (e.g., a potential repeat of the distorted pricing arising from set-aside bidders’ blatant gaming behaviour in the 2008 AWS-1 auction), the Department needs to correct the eligibility rules. Failing this, the Department needs to reduce the quantity of
spectrum set-aside in each service area and layer on a sub-GHz broadband spectrum cap during the auction to reduce the imbalance in sub-GHz broadband spectrum holdings. Additionally, the geography of the set-aside must be restricted to urban service areas only as detailed in Paragraph 94 and TELUS’ response to Question 2.

If implementing a set-aside then correct the eligibility rules

82. The Department refers in Paragraph 23 of the Consultation to the FCC’s recent use of a set-aside in the 600 MHz incentive auction. However, the Department’s proposed set-aside is markedly different than the FCC’s (which implemented a conditional set-aside with capped access). The Department’s proposal removes all of the checks and balances built into the U.S. set-aside.

83. Firstly, the FCC spectrum reserve was conditional. It was only triggered when forward incentive auction average pricing in the top 40 U.S. markets (partial economic areas [PEAs] in this case) reached an average price of $1.25 per MHz-pop. In other words, the FCC recognised that bidders did not need protection from foreclosure except potentially at higher price levels. This is certainly applicable to Canada where all the expected set-aside eligible bidders are well capitalised, mature and stable wireline incumbents. In the FCC incentive auction, open and set-aside blocks were one generic product until the set-aside was triggered and only then did they go onto separate clock prices. Up until this point, all bidders could express their full demand across all available product. The FCC designed it this way to ensure that set-aside spectrum did not sell for too low a price. In other words, the set-aside winners paid some proxy for market value. TELUS provides specific recommendations for a similar set-aside trigger mechanism in its response to Question 7 on the methodology for price increments.

84. Secondly, the FCC rules only excluded bidders that held more than 45 MHz (i.e., approximately one third) of the sub-GHz broadband spectrum from bidding on reserve spectrum in any given service area. The FCC recognised that all operators should be able to bid on all spectrum where they did not already hold a significant amount of sub-GHz broadband spectrum. With Verizon surpassing this threshold in 82% of the country and AT&T surpassing this threshold in 75% of the country (no other operators’ sub-GHz
spectrum holdings beyond the threshold anywhere in the country), the U.S. 600 MHz auction involved multiple set-aside eligible bidders in every service area.

85. Therefore, the Department should allow all providers in Canada with less than 45 MHz of sub-GHz broadband spectrum in any region to bid on the set-aside in that region. Additionally, the set-aside should be invoked only when the auction exceeds some high price metric such as $1.25 per MHz-pop.

**If implementing a set-aside, anything more than 20 MHz unjustified**

86. No operator in Canada has access to a contiguous 30 MHz (15+15 MHz paired FDD) sub-GHz channel. 850 MHz (Cellular) band enables up to 22 MHz of contiguous spectrum per operator (11+11 MHz in block A, used as 10+10 MHz paired FDD), but will be deployable for 5G only once it is completely refarmed. Maintaining GSM/HSPA networks to support Canadian consumers with older handsets, and to enable inbound roaming among other reasons, precludes refarming in the foreseeable future as specified in TELUS’ introductory response to this Question. In the 700 MHz auction, Rogers foreclosed access in most major markets to the contiguous paired 700A/B blocks (24 MHz, but used as 10+10 MHz paired FDD in LTE). Regional providers SaskTel and Eastlink have begun to deploy their 700 MHz spectrum from the 2014 auction, but the extent of their deployment is orders of magnitude below that of the national providers. Shaw and Videotron appear to have not deployed the spectrum whatsoever.

87. The 600 MHz band is the first sub-GHz band to potentially enable operators to acquire contiguous channel bandwidths in excess of 10+10 MHz. The proposed set-aside virtually guarantees that one of these operators is a set-aside eligible regional operator, and that a second contiguous 15+15 MHz or greater channel is only available through exceptional means whereby a national provider wins 3 of 4 unrestricted blocks and at least one national provider is foreclosed. TELUS views the proposed set-aside as going far beyond presenting an “opportunity to support the competitiveness of the newer service providers [who are strong regional cable incumbents] by ensuring that they will have an opportunity to acquire additional low-band spectrum to effectively compete with the services offered by the more established wireless service providers”; it creates privileged access to a block of contiguous
sub-GHz spectrum the size of which no national operator holds. Any set-aside must thus not exceed 20 MHz, so as to not pick winners by assigning a predetermined contiguity advantage by regulatory fiat.

88. Rogers makes a similar recommendation: “If ISED persists with a set-aside, it must be reduced from 30 MHz to 20 MHz.” Rogers makes a similar observation to TELUS in Paragraph 78 of its response that “no carrier in Canada has more than 10+10 MHz of contiguous, low band spectrum.” Rogers further suggests that 20 MHz is “sufficient bandwidth for a strong business case to deploy LTE services in rural areas” (Paragraph 82), and notes that “in almost all cases the regional carrier would have fewer customers than a typical national operator and less need for spectrum as a result.” (Paragraph 83). Finally, Rogers recognises the financial strength of the regional providers: “If a non-national carrier wanted 30 MHz, this is not precluded by a 20 MHz set-aside, as it would in any case receive an implicit subsidy of the set-aside and have the financial and commercial capacity to compete for an additional 10 MHz open block.” (Paragraph 7). TELUS fully supports Rogers in its views on this matter.

If implementing a set-aside, it must be complemented by a cap on sub-GHz holdings to address low-band spectrum concentration concerns not resolved by proposed set-aside

89. If the Department deems a set-aside as necessary, and maintains their eligibility rules (which exclude national providers where they hold less than 45 MHz of spectrum) despite the strong arguments against a set-aside and the proposed eligibility rules, then having a low-band cap in place on top of the set-aside would address the industry problem of low-band spectrum concentration arising from Rogers’ historical national holdings of 850 MHz spectrum (as compared to the regional holdings of 850 MHz spectrum within the ILEC territories for telcos).

90. As illustrated in Table 11 above, a 50 MHz cap on sub-GHz broadband spectrum holdings would serve to drive the industry to the highest level of sub-GHz parity, and would create an effective 30-40 MHz set-aside for regional providers.

91. TELUS acknowledges that a 50 MHz sub-GHz broadband cap, despite providing a fair opportunity for bidders to correct the current sub-GHz spectrum imbalance, would preclude
Rogers from meaningful access to 600 MHz in the near term except through subordination which they have implied a strong interest in through their discussion of strategic frequency assignment value in this consultation.

92. Table 12 illustrates the scenario where a 60 MHz sub-GHz broadband spectrum cap is applied. It lists the number of 5+5 MHz paired FDD blocks that each bidder could bid on in an auction with a 60 MHz sub-GHz broadband spectrum cap while assuming that a two block (20 MHz) set-aside is implemented. This scenario illustrates a potential for competitive bidding on open blocks in each region (as the maximum aggregate demand across the three national bidders exceeds five – the number of open blocks). By imposing a 60 MHz cap on sub-GHz broadband holdings, a measure of fairness is introduced in creating an opportunity for all bidders (both national and regional providers) to balance the current disparity in sub-GHz broadband spectrum holdings. Unlike the 50 MHz cap scenario shown above, it does not preclude Rogers from bidding in any region during the auction.

59 Although TELUS emphasises its strong opposition to a set-aside, a 10 or 20 MHz set-aside could be coupled with a 60 MHz sub-GHz broadband spectrum cap to prevent regional providers from being foreclosed from accessing the band in most regions. We note, however, that this type of foreclosure appears highly unlikely, given that it would require massive bids (to try to buy 5+ blocks) on the part of various national providers.
Table 12: Number of blocks each bidder could bid on under 60 MHz cap

<table>
<thead>
<tr>
<th>Tier 2 Service Area</th>
<th>Service Area Name</th>
<th>TELUS</th>
<th>Rogers</th>
<th>Bell</th>
<th>Set-Aside Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-001</td>
<td>Newfoundland and Labrador</td>
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<td>2</td>
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</tr>
<tr>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2-006</td>
<td>Eastern Ontario and Outaouais</td>
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<td>Yukon, Nunavut, NWT</td>
<td>4</td>
<td>3</td>
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</tr>
</tbody>
</table>

If implementing a set-aside, must remove the set-aside in rural service areas

93. The proposed set-aside eligibility rules, by virtue of the use of Tier 2 licences, confer upon the regional providers (other than SaskTel) eligibility to bid on spectrum province wide despite not having cable plant or mobile network assets beyond urban and suburban markets. Unlike telcos with a historical obligation to serve, cable footprints typically focus on higher density urban areas and as such do not reach nearly as many rural and remote Canadians as wireline telecom networks. Similarly, TELUS covers over 99% of Canadians with mobile service and over 97% with LTE. Regional providers do not come close to achieving these metrics. Moreover, they have been provided disincentives from engaging in facilities-based investment to stretch their coverage through the provision of a generous mandated roaming framework from the Department and the CRTC. The proposed deployment requirements in the Consultation are also quite lax in providing 20 years to
enforce build out to Tier 4 towns. TELUS further details its concerns with the mandatory roaming framework and the opportunities for network arbitrage that it provides in its response to Question 13.

94. As such TELUS recommends that the Department:

   a. Enforce the deployment requirements for 600 MHz spectrum as TELUS details in its response to Question 12.

   b. Remove set-aside measures for the 111 of 172 Tier 4 service areas without a population centre greater than 30,000. This recommendation effectively subdivides each Tier 2 service area into two sub-licence areas – a collection of all Tier 4 service areas within the service area containing a population centre greater than 30,000 (“urban sub-licences”) and a collection of the complementary Tier 4 service areas (“rural sub-licences”), regardless of the geographic contiguity of these two sets. Removing the set-aside from rural sub-licences would ensure that providers that possess a demonstrated desire and proven ability to invest in rural areas can deliver world class connectivity to rural Canadians, as opposed to having set-aside spectrum sit fallow in the hands of regional providers with no business incentive nor requirement to deploy it for 20 years.

**Q1D: Set-Aside Transferability**

Q1D—ISED is seeking comments on its proposal to limit the transferability of the set-aside spectrum for the first five years of the licence term.

95. If the Department insists on implementing a set-aside in spite of its shortcomings, TELUS supports the proposal to limit the transferability of set-aside spectrum for the first five years of the licence term. TELUS recommends the proposed five-year deployment requirements be assessed before the expiry of the prohibition on licence transfer to set-aside ineligible entities. By forcing deployment requirements to be met prior to transfer, the Department will help discourage speculation. TELUS is strongly opposed to permitting the transfer of

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any set-aside spectrum that has not been deployed. Licences for which the five year deployment requirements have not been met should be revoked in part or in whole by the Department as detailed in TELUS’ response to Question 12.

96. TELUS notes that the majority of respondents who answered this question supported the limitation on transferability as proposed by the Department.

**Q1E: Set-Aside Block Size**

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Q1E—ISED is seeking comments on its proposal to auction the set-aside spectrum as three separate paired blocks of 5+5 MHz.
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97. TELUS reiterates its opposition to set-aside measures for the reasons detailed in its response to Questions 1A / 1B / 1C. If the Department carries through with a set-aside, TELUS supports the proposal to partition the set-aside spectrum into separate paired blocks of 5+5 MHz. (This recommendation holds true regardless of the number of set-aside blocks.) The set-aside should not necessarily be acquired by a single bidder. A single block per region would result in an all or nothing proposition and would effectively prevent smaller providers such as Xplornet and CanWISP members from accessing set-aside spectrum as set-aside eligible entities within their regions of operation. Partitioning the set-aside into multiple paired blocks of 5+5 MHz also provides the opportunity for market forces to permit multiple winners in service areas such as Eastern Ontario where Shaw and Videotron both have mobile networks.

98. TELUS notes that almost all respondents were in full support of the proposal to auction the set-aside spectrum in separate paired blocks of 5+5 MHz.
**Q2: Tier Sizes**

**Q2**—ISED is seeking comments on its proposal to use Tier 2 service areas across the country, except in the three Territories (Yukon, Northwest Territories and Nunavut) where Tier 4 service areas would apply.

99. TELUS has always advocated for the large Tier 2 service areas for competitive licensing of mobile services, especially for sub-GHz broadband spectrum and supports Tier 2 service licences for the 600 MHz spectrum band. TELUS largely agrees with the points made by the Department in Paragraphs 35-37 of the Consultation – that due to the propagation characteristics of 600 MHz (as a sub-GHz band), it is best matched to larger (e.g., Tier 2) service areas that minimise coordination requirements between operators.

100. However, TELUS has several concerns with supporting the use of Tier 2 service areas in the context of the proposed 600 MHz licensing framework.

101. The Department’s proposed criterion for assessing set-aside eligibility is on the basis of geography of facilities. This assessment criterion has the effect of providing eligibility to bid on the set-aside spectrum in regions where a bidder has no facilities (e.g., smaller markets within a Tier 2 service area). Thus, regional mobile operators who have only deployed in urban and suburban markets and have no incentive to build out any further given the generous mandatory roaming framework and proposed 10/20 year deployment requirements for geographies at Tier-3 / Tier-4 levels, respectively, will win and sit on precious rural spectrum.

102. TELUS recommends that the 600 MHz spectrum be licensed in Tier 2 service areas but that each of the Tier 2 licences be broken into two sub-licences such that the 111 of 172 Tier 4 service areas without a population centre greater than 30,000 pops are grouped in a sub-licence by Tier 2 region. In other words, each Tier 2 licence is broken into two sub licences:

   a. An “urban” sub-licence – the set of all urban/suburban Tier 4s within a Tier 2 service area with a population centre greater than 30,000; and
b. A “rural” sub-licence – a set of all rural and remote Tier 4s within a Tier 2 service area without a population centre of 30,000 regardless of geographic contiguity.

103. TELUS proposes removing the rural sub-licences from the set-aside to ensure that providers with a proven desire to invest in rural areas can deliver world class service for Canadians, as opposed to having 43% of the band which is so precious to rural connectivity sit fallow in the hands of cable companies with no business incentive or requirement to deploy it for 20 years.

104. TELUS’ recommendation to create an urban and a rural portion of each Tier 2 service area with a simple and clear rule and not place any bidding restriction on rural sub-licences would also serve to enhance the prospects at auction for the many more rural providers who commented on the proposed service area tiering. TELUS does not agree with Cogeco’s proposal that the Department should create custom service areas to match its various small cable operations, and suggests that secondary market subordination agreements are best suited to deal with such concerns.

Q3: Generic Licences and Set-Aside Categorisation

Q3—ISED is seeking comments on:

a) the proposal to use generic licences; and
b) the proposal to categorize all blocks won by set-aside-eligible bidders as set-aside blocks.

Generic Licences

105. TELUS supports, as does nearly every respondent who commented on Question 3a, the proposal to use generic licences for the clock rounds of the auction. TELUS concurs with the Department’s assessment that the use of generic licences is appropriate since blocks are “sufficiently similar and comparable in value to one another”. The use of generic licences makes the bidding process more efficient. TELUS suggests that preferences for specific blocks in a given service area or set of service areas can be addressed with the adoption of an appropriate assignment mechanism as detailed in its response to Question 6.
106. Only Eastlink pushed back on the use of generic licences, claiming that having “a single generic licence in each area with two ‘products’ is complicated,” possibly due to a misunderstanding of how set-aside spectrum will get priced by the solver. Just as in the 700 MHz auction, where there were generic licences applied to multiple products within a given service area (i.e., three sets of two generic licences: Lower 700 MHz paired B+C, lower 700 MHz unpaired D+E, and upper 700 MHz paired C1+C2), so too here would there be two products (set-aside and unrestricted) in each service area under the Department’s proposal.

107. TELUS continues to advocate for any set-aside to be made conditional on reaching a high price threshold (perhaps as measured by some subset of top market licences) above which it is deemed that foreclosure might start to occur (e.g., $1.25/MHz-pop, as implemented by the FCC). The implementation of this recommendation would require there to be a single (unrestricted) product with its associated price clock until the high price threshold was exceeded; only then would the auction divide generic licences into two separate products (set-aside and open) with independent price clocks for each. This mechanism would enable regional providers to participate meaningfully in the price discovery phase of the auction.

**Categorisation of blocks won by set-aside-eligible bidders**

108. While TELUS opposes both the use of set-asides and the magnitude of the proposed set-aside, TELUS supports the proposal for all blocks won by set-aside-eligible bidders to be categorised as set-aside blocks (should a set-aside be implemented). TELUS believes that if a set-aside eligible bidder is going to bid for open spectrum blocks, they must be prepared to deploy the spectrum. TELUS supports this proposal as one significant measure of deterring set-aside-eligible bidders from gaming bidding behaviour, as they would be forced to deploy (rather than resell) any open block spectrum won before the expiration of the proposed moratorium on transfer.

109. TELUS notes that this provision also resolves the situation where (should the Department determine that a set-aside is appropriate, despite all evidence to the contrary) two or more set-aside eligible bidders in a licence area win more blocks than are set aside. All of the winners would get set-aside spectrum and none would get unrestricted spectrum.
110. TELUS notes that almost all respondents were in full support of the proposal to categorise all blocks won by set-aside-eligible bidders as set-aside blocks.

**Q4: Anonymous Bidding and Information Disclosure**

<table>
<thead>
<tr>
<th>Q4—ISED is seeking comments on:</th>
</tr>
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<tbody>
<tr>
<td>a) the use [of] anonymous bidding during the auction; and</td>
</tr>
<tr>
<td>b) the information that will be disclosed to bidders during the clock rounds, as described in annex A (which would also apply to the CCA with a modified activity rule set out in annex B) and annex C.</td>
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</table>

**Anonymous Bidding**

111. TELUS supports the proposal to use anonymous bidding in the clock rounds of the auction. TELUS concurs with the Department’s rationale for proposing anonymous bidding as described in Paragraph 56 of the Consultation; in particular, that anonymous bidding would promote value-based bidding and reduce the potential for anti-competitive (gaming) behaviour in multi-round auction formats.

112. TELUS notes that the only party to oppose anonymous bidding in the clock rounds was Eastlink who was the most flagrant abuser of the set-aside rules in the 2008 AWS-1 auction. Eastlink’s gaming bids peaked at ten times its final spend, driving up the prices of other bidders and leading to the price of unrestricted spectrum in the Atlantic region reaching seven times the price of set-aside spectrum – the biggest differential in the country. This was achieved using two tactics: (i) by parking eligibility points on the open spectrum in the Atlantic region for two months of bidding to drive up the open spectrum prices (something anonymous bidding does not address); and (ii) by being very aggressive in retaliating against any bidders who bid on set-aside spectrum in the Atlantic region by parking on the properties outside of Eastlink’s territories that these set-aside eligible bidders appeared to also be interested in (something anonymous bidding does address). We assume this is why Eastlink (and only Eastlink) advocates for full visibility in the clock rounds of the 600 MHz auction.
113. TELUS supports the use of anonymous bidding in the assignment stage as well. The disclosure of specific bids following each of the assignment rounds (whether in TELUS’ preferred alternatives or Rogers’ preferred alternatives but ideally not the Department’s originally proposed assignment stage design) could potentially lead to anti-competitive behaviour due to the sequential nature of assignment round bidding.

**Clock Round Information Disclosure**

114. TELUS supports the proposals for information disclosure during the clock rounds as described in Annex A of the consultation, in alignment with its support for the CCA format using the WARP-based activity rule.

115. TELUS notes that the same information is proposed for disclosure during the clock rounds for the CCA format using the GARP-based activity rule; while TELUS does not support the CCA format using the GARP-based activity rule, TELUS accepts that the proposed information disclosure is appropriate for the use of that format.

116. TELUS notes the additional information disclosure proposed for the ECCA format; specifically, the provision of estimates for a bidder’s base price during the clock rounds and the aggregate demand in each service area after the final clock round. While TELUS does not support the ECCA format, TELUS understands the rationale for the proposed information disclosure in defining that format.

117. Respondents are generally supportive of the proposed information disclosure. Videotron strongly supports the additional disclosure of the final clock round aggregate demand, which forms their primary basis for supporting the ECCA (as discussed in Question 5). Only Eastlink, Shaw and Rogers express concerns with respect to the proposed rules for information disclosure.

118. Eastlink expresses a concern that mirrors its opposition to anonymous bidding, claiming that additional information disclosure would further a perceived disadvantage to regional providers. Eastlink therefore proposes that the disclosure rules remain as they were in the 700 MHz and 2500 MHz auctions, and that additional disclosure of “discount details and/or aggregate demand on the final clock round” not be permitted. (This “information
asymmetry” constitutes Eastlink’s main argument against the ECCA, as addressed in its response to Question 5.)

119. Shaw expresses the opposite opinion from Eastlink’s and suggests that regardless of that regardless of the type of CCA implemented (CCA with WARP, CCA with GARP, or ECCA), aggregate demand information should be provided in the final clock round. Shaw appears to view the as risk of foreclosure (knockout) of smaller players is mitigated by the presence of a set-aside.

120. Finally, Rogers’ response uses the question on information disclosure as a platform for rejecting the CCA format altogether. Rogers disagrees with the proposal to withhold aggregate demand information following the final clock round, suggesting that while the Department may have “good motives” in withholding the information, Rogers views that action as insufficient in trying to curtail “spiteful bidding”. In Rogers’ view, only moving away from CCA solves this problem.

121. TELUS does not find any of these responses to provide compelling enough evidence against the proposed clock round information disclosure and thus sustains its support for the proposed rules.

Q5: Auction Format

Q5—ISED is seeking comments on:
a) The advantages and disadvantages of the three auction formats being considered for the 600 MHz auction:
   i. Combinatorial clock auction, using the WARP-based activity rule (annex A);
   ii. Combinatorial clock auction, using the GARP-based activity rule (annex B);
   iii. Enhanced combinatorial clock auction (annex C).
b) Where there is a preference for one of the options, respondents are asked to provide a rationale and explanation.

CCA using WARP-based activity rule

122. TELUS supports the use of the CCA format using the WARP-based activity rule (with exceptions for implementation of the assignment stage, as described in response to Question 6).
123. One advantage of applying the CCA format using the WARP-based activity rule is that this format has been tested and proven in the two previous Canadian CCA-format auctions for 700 MHz and 2500 MHz spectrum, with most potential bidders having some degree of familiarity with the format (given their participation in one or both of those auctions) or have means to access auction consultants who are experienced with the CCA format using the WARP-based activity rule.

124. TELUS notes that the WARP-based activity rule seems to be more forgiving of potential deviations of bidding from a strict valuation model. TELUS suggests that constraints on allowable bids should be based only upon actual explicit expressions of revealed preference (as under the WARP-based activity rule), rather than through being determined implicitly by inference based on a larger set of bids.

CCA using GARP-based activity rule

125. TELUS does not support the use of the CCA format using the GARP-based activity rule.

126. TELUS’ rationale for rejecting the GARP-based activity rule is clearest when contrasted to its support for use of the WARP-based activity rule. None of the potential bidders in the 600 MHz auction has familiarity with the GARP-based activity rule; preparing for an auction with this change would seem to require reconsideration of the methodology applied for bid construction and decision making. Tools available for bidders from their experience with previous auctions would need to be heavily modified or rebuilt to support the GARP-based activity rule.

127. Developing tools under the GARP-based activity rule seems quite challenging. In contrast to the WARP-based activity rule (which is already complex, but only requires the calculation of a minimum from a set of linear equations), TELUS understands that checking whether particular clock round packages or specific bid amount on supplementary round packages are permitted would require solving the feasibility of an increasingly large set of linear inequalities as the auction progresses in higher clock rounds. TELUS does not believe that these checks can be performed as closed-form solutions; rather, each check under the GARP-based activity rule would require the solution of a linear program. As such, TELUS
believes that the implementation of bidding tools would be far more complex under the GARP-based activity rule, and could entail a reliance on the availability of the Department’s auction system and tools.

**ECCA**

128. TELUS strongly opposes the use of the proposed ECCA format.

129. TELUS’ rejection of the ECCA format is partially due to its preference for the WARP-based activity rule over the GARP-based activity rule (which the ECCA would adopt), as described above.

130. TELUS appreciates the attempt being made by the Department in proposing the ECCA format to reduce bidder pricing uncertainty through the provision of estimated discount at the end of each clock round. However, even with consideration of the benefits to price certainty that would come with discount estimates, TELUS would still strongly object to the use of the ECCA format due to its distortion of the Vickrey pricing mechanism.

131. TELUS supports the adoption of Vickrey (second price) mechanisms as the basis of price determination, as the opportunity cost of the spectrum being allocated serves as an appropriate balance between ensuring that Canadian taxpayers are compensated for a scarce public resource while not causing undue and excessive costs to providers who could otherwise deploy capital for the delivery of innovative services to Canadian consumers. In order to appropriately reflect this opportunity cost, the Vickrey price calculations must be based on actual bids from competing bidders.

132. Under the ECCA format, the price determination mechanism does not determine a bidder’s price based on what other bidders have actually bid; rather, the ECCA assumes a set of implied maximum valuations based on the historical clock round package bid patterns of other bidders. As such, the proposed ECCA format more closely resembles a first-price auction than a second-price auction as described in the Consultation. This pricing mechanism would seem to prioritise the generation of auction revenues over pricing based on market value (i.e., the opportunity cost of the spectrum). On this basis as well, TELUS’ opposes the use of the ECCA format.
Summary of Responses

133. Most respondents, including those without prior experience in the 700 MHz or 2500 MHz clock auction (e.g., Cogeco), support one of the Department’s proposed CCA formats; Rogers, Eastlink, and some of the smaller / inexperienced respondents desire simpler auction formats (such as SMRA).

134. Of those respondents who prefer the use of a CCA (Bell, Cogeco, Quebecor, SaskTel, Shaw, Tbaytel and Xplornet), most cite package bidding (mitigating exposure risk) and the use of a Vickrey second-price rule as the key attractive benefits.

135. Bell and Shaw both recommend using the CCA with the WARP-based activity rule on the basis of its familiarity, the fact that it has been well-tested in both the Canadian and international contexts, and the flexibility associated with the WARP-based activity rule (when compared to GARP).

136. SaskTel expresses its support for the CCA with the GARP-based activity rule, but TELUS disagrees with SaskTel’s assessment of GARP. SaskTel describes “the flexibility offered by the GARP-based activity rule” in comparison to the “additional constraints that would be imposed under the proposed [WARP] rules.” TELUS (and most other respondents) view the GARP-based activity rules as less forgiving of mistakes than the WARP-based activity rule, in that GARP assumes inflexible valuations and does not accommodate changes in valuation that may occur through the price discovery process (Bell describes this concept as “value interdependencies” in Paragraph 53 of its response). Even Rogers, who recommends strongly against any CCA, describes the benefits of flexibility with illustrations of how it “adapted [its] valuations, based on new information” in the 700 MHz auction, submitting relaxed bids under WARP which would have been disallowed as GARP violations.

137. Cogeco, Tbaytel, Xplornet (who is “largely indifferent” as to which particular CCA is selected) and Videotron all supported the ECCA format to varying degrees. Most of these respondents praised the perceived benefits of the ECCA, stating simplified corporate governance (e.g., improved price certainty via discount information estimates) and the
ability to secure a bidder’s final clock round package given excess supply disclosure (minimising the importance of the supplementary round). However, these respondents neglect to address the key flaw noted by TELUS above and echoed by Bell, Rogers, SaskTel and Shaw in their responses: the use of implied maximum valuations (based on clock round bids) transforms the ECCA from a Vickrey (second-price) auction into a first-price auction. Bell, Rogers and SaskTel all additionally noted that at this point in time, the ECCA is mainly an academic construct, never having been rigorously tested in the field or critiqued through sufficient peer review. SaskTel put it best: “The 600 MHz spectrum auction is too important to risk using an untested auction format.”

138. On balance and in consideration of the responses presented, TELUS maintains its support in principle of the combinatorial clock auction format using the WARP-based activity rule. This auction format is familiar to Canadian bidders and has straightforward constraints on bidding and a second-price (Vickrey) price determination mechanism, both of which are based on actual expressions of bidder behaviour rather than inferred preferences.

**Q6: Assignment Stage**

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<th>Q6—ISED is seeking comments on:</th>
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<td>a) The proposal that winners of more than one block in a single service area be assigned contiguous blocks; and</td>
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<tr>
<td>b) The proposed structure of the assignment stage, including the order of the assignment rounds and the combination of service areas into a single assignment round.</td>
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**Guarantee of Contiguity**

139. TELUS supports the proposal that winners of more than one block in a single service area be assigned contiguous blocks, and notes that the guarantee of self-contiguity was unanimously supported by all respondents.

140. Winners of multiple spectrum blocks will want to avoid intermodulation distortion, an adverse effect which occurs when multiple transmissions from a radio combine in such a
way that creates self-interference. The phenomenon can also be observed when combining blocks from different frequency bands through carrier aggregation, a transmission technique commonly employed to improve the utilisation of spectrum assets. Providing wireless services using blocks subject to intermodulation distortion entails the deployment of multiple radios (i.e. physically separating the transmission of blocks subject to intermodulation distortion). When compared to higher frequency bands, 600 MHz antennas and integrated antenna-radio products are much larger in size with consequential impact to the feasibility of deployment in the presence of intermodulation distortion.

141. TELUS strongly supports the efficient use of spectrum as a key driver of both economic and societal benefits in alignment with the policy objective of the Spectrum Policy Framework for Canada (SPFC) “to maximize the economic and social benefits that Canadians derive from the use of the radio frequency spectrum resource”. Maximising the contiguity of assignments and minimising or eliminating fragmentation represents efficient use of a scarce public resource and enables cost effective network deployments, especially in rural and remote areas where return on infrastructure investment is very lean, which in turn ensures the timely delivery of innovative services to Canadian consumers in all regions.

Assignment Stage

142. TELUS continues to not fully support the proposed structure of the assignment stage. As proposed, the assignment stage guarantees the contiguity of a bidder’s own spectrum winnings and allows a bidder to express preferences for the position of those contiguous winnings within the band. However, the proposal does not provide any consideration for the position of a winner’s blocks relative to the blocks of other winners.

143. There are a number of economic reasons for a provider to seek adjacency with others, as demonstrated by the recent patterns of holdings resulting from previous auctions and secondary market transactions in bands such as AWS-1 and 2500 MHz. For example, in its

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61 The conditions which lead to intermodulation distortion are different for each band, and depend on both the transmission bandwidths and the duplex gap for the band. In the 600 MHz band, intermodulation distortion occurs in many different scenarios when non-contiguous blocks are combined across the band.

62 Ideal antenna size is determined by transmission wavelength, which is inversely proportional to carrier frequency. The lower the frequency, the larger the antenna size.
attempt to secure adjacency to Rogers in the 2500 MHz auction assignment stage, Videotron bid approximately six times more than the base price of its winning package.

144. Most respondents affirmed the Department’s proposed assignment stage mechanism; TELUS and three others (CCI, Eastlink and Rogers) each proposed changes. Eastlink and CCI do not support the proposed order for assignment rounds (i.e., service area by service area in descending population), with CCI expressing concerns about gaming and Eastlink suggesting an inherent bias towards the largest cities. Neither demonstrates clear negative impacts to ISED’s proposed assignment stage ordering.

145. Rogers expressed concerns with the Department’s proposed assignment round mechanism, suggesting that it ignores both technical and strategic value. TELUS shares this view with Rogers, as described above.

146. Rogers proposes three candidate assignment mechanisms that support a sealed bid, second price (assignment round) auction format which share many features with the two options TELUS proposed in its comments.

147. Rogers’ proposed Option i seems straightforward and highly feasible. Rogers’ proposal ensures that regional providers cannot be separated from potential partners and allows regional providers to express their valuation for specific adjacencies (in the case of multiple regional providers winning in a region) without being priced by national providers. TELUS assumes that under Rogers’ proposal, the results of the initial assignment round for national providers would be disclosed to regional bidders for each region-by-region assignment round in which they participate, thereby allowing them to bid their preferences for adjacency to potential partners. TELUS would accept this proposal if selected as the assignment stage mechanism.

148. TELUS notes Rogers’ Option ii proposal reduces complexity for bidders and would also accept it if selected as the assignment stage mechanism, but is unsure as to whether the set of simple rules sufficiently addresses every possible permutation of winner outcomes.

149. TELUS appreciates the spirit in which Rogers’ Option iii proposal is offered, and notes that this option provides the most bidder flexibility when compared to Rogers’ other two
proposals. TELUS also recognises, as noted by Rogers, that this mechanism was implemented successfully in the 3.6 GHz spectrum auction in Ireland. For these reasons, TELUS strongly supports this proposal and prefers it for implementation of the assignment stage.

150. In its response to this Consultation, TELUS proposed two alternative mechanisms for the assignment stage of the auction that would allow bidders to express valuations for their block preferences, both intrinsic and in relation to others. These two options are included here for completeness.

**TELUS Option 1: Winner-Submitted Concrete Block Scenarios and Assignment Round Bidding**

a. Rather than having each winner bid blindly on the position of its contiguous winnings, all winning bidders within a given service area grouping (as described below) would bid on a collection of scenarios that takes into account all possible outcomes proposed by the set of winning bidders.

b. Before each assignment round corresponding to a given service area grouping, the names and number of generic licences for all winning bidders would be provided. Each interested assignment bidder would construct a set of concrete block scenarios (e.g., specific blocks for each winning bidder) on which it wishes to bid and would submit the set of scenarios to the Department. Scenarios which do not ensure the contiguity of any winner’s blocks within the service area grouping would be prohibited. Ideally, this set of proposal-driven scenarios would be a smaller subset than the potentially exhaustive list of all permutations over all sets of winners.

c. The Department would collate the list of unique proposed concrete block scenarios and publish the full list for assignment round bidding in a time-bound single bid set format. Non-interested winning bidders could opt out of participating (effectively bidding zero on all scenarios) and would be notified of their specific blocks as specified in the winning scenario resulting from the assignment round.
TELUS Option 2: Concrete Block Scenario Permutations and Assignment Round Bidding

i. In the event that the Department or other bidders expresses a strong exception to TELUS’ proposed Option 1, TELUS suggests that an alternative mechanism to winner-submitted concrete block scenarios could be implemented wherein the Department would allow bidders to bid on a set of scenarios for each service area grouping listing all licensees’ concrete block positions under all possible permutations. As in Option 1, this proposed assignment mechanism would require the disclosure of winners and the number of generic licences they have won within the service area grouping.

ii. The Department would publish the entire set of possible permutations for any given collection of winners (and their associated number of generic blocks) in an assignment round, so as to provide an unbiased set of options available to bidders for the expression of their relative valuations. For example, assuming five winners across the seven paired blocks, the highest number of permutations would come from an outcome where two of the bidders each win two generic blocks (20 MHz), and the remaining three each win a single 10 MHz block. In such a scenario, there are 120 possible winner permutations which is a manageable number of bids. Similarly, having four winners yields 24 permutations to bid on (and so on).

151. Upon consideration of the five alternate proposed options (three from Rogers and two from TELUS) for implementation of the assignment stage, TELUS strongly prefers Rogers’ Option iii but recognises the merits of Rogers’ other two options as well, with TELUS next preferences being Rogers’ Option i and then Rogers’ Option ii. TELUS notes that the adoption of any of these five options as an assignment stage mechanism would be preferable to the adoption of the Department’s proposal (which does not take the relative position of bidders into account).

152. Regardless of which of these proposed options is adopted for the assignment round, TELUS supports the Department’s proposal for order of the assignment rounds, service area group by service area group, in descending order of population, where appropriate. TELUS
supports the grouping of service areas into a single assignment round when the winners and number of licences they have won are the same in the service areas being considered.

153. TELUS supports the use of a “nearest Vickrey” mechanism for price determination, which would calculate and reflect implied opportunity cost of all participant bids. Each bidder’s price would be revealed to that bidder following the close of that particular round.

**Q7: Price Increment Rules**

Q7—ISED is seeking comments on the proposed methodology for incrementing prices during the clock rounds, as described in annex A.

154. The proposed methodology for incrementing prices during the clock rounds fails to address the fundamental shortcoming of previous auctions with set asides, as gaming behaviour as seen in the AWS-1 auction remains fully available (see TELUS’ detailed response to Question 1 and the supporting NERA analysis63,64). The only new addition provided by the proposed rules is to ensure that set-aside spectrum is never more expensive than equivalent open spectrum in a given service area, for the sole benefit of set-aside eligible bidders.

155. TELUS, along with other respondents, has expressed concerns with cross-bidding and the gaming opportunities created by the presence of a set-aside (which led to blatantly abusive and non-economic bidding in the AWS-1 auction). TELUS notes that while the Department has proposed pricing rules which create the appearance of addressing this problem, they in fact do nothing of the sort. Set-aside eligible bidder demand will drive up both the set-aside and open block prices, but the clock round set-aside block prices will have no effect when the solver determines the nearest Vickrey pricing.

156. The proposed clock round pricing rules are incapable of mitigating gaming concerns. The proposed methodology for incrementing prices on set-aside blocks would have open spectrum prices tracking set-aside prices when a set-aside eligible bidder drives the set-aside product into excess demand. TELUS asserts that for the majority of service areas

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63 Dippon 2017-10.
64 Dippon 2009.
(over 90% of Canada), this price equalisation would be in appearance only. With few exceptions where TELUS believes set-aside competition would impact pricing (e.g., Eastern Ontario and Northern Ontario), the likely set-aside-eligible bidders are regional providers with almost exclusively non-competing mobile coverage footprints. When only one set-aside-eligible bidder is able to bid on the set-aside product in a given service area, the published clock round prices will not be a true reflection of the cost of spectrum (as the Vickrey price will be determined by the reserve price). Both Bell and Rogers made similar observations to TELUS. Bell notes that the proposed price increment methodology may “result in artificially high prices being paid for non-set-aside spectrum which further increases the pricing distortions that arise due to implementing spectrum set-asides.” Rogers refers to the 2008 AWS auction, with “entrants either parking demand in open spectrum or deliberately driving up the price of non-set-aside spectrum for strategic reasons.” Unsurprisingly, none of the respondents who would qualify as set-aside eligible took issue with the proposed methodology for incrementing prices.

157. These valid gaming concerns are all the more reason to consider an open auction or under a 60 MHz sub-GHz broadband spectrum cap (with bidding on a single open product per service area). Nevertheless, TELUS proposes that if a set-aside is implemented, the invocation of the set-aside should only take place at a high price level (such as when the average price across the top eight service areas reaches $1.25 per MHz-pop), an approach implemented by the FCC which recognised that bidders did not need protection from foreclosure except at high price levels. If a set-aside is retained, this is a simple change to implement and it is entirely consistent with the rationale for a set-aside while promoting market efficient outcomes. In either case (sub-GHz spectrum cap instead of set-aside or price-triggered set-aside), ISED can reduce the opening bid levels to provide the price discovery phase missing from the auction (due to an attempt to ensure a modest price is paid by regional providers for the uncontested set-aside blocks in 90% of the country).

158. If the Department addresses the concerns described above regarding gaming and price disparities through these proposals, then TELUS would support the Department’s use of bid increments as proposed, in the range of 1% to 20% and in proportion to the aggregate demand of the product whose price is being incremented.
Q8—ISED is seeking comments on the proposed Affiliated and Associated Entities rules that would apply to bidders in the 600 MHz auction

159. TELUS supports the proposed Affiliated and Associated Entities rules that would apply to bidders in the 600 MHz auction. All but four respondents (Cogeco, Eastlink, Ice Wireless and Rogers) across the Canadian wireless industry have also continued to support these rules.

160. TELUS notes that the wording and framework is unchanged from other recent auctions; the same Affiliated and Associated Entities rules have applied to the past four auctions (700 MHz, 2500 MHz, AWS-3 and the auction of residual AWS-3 and 700 MHz spectrum).

161. Bell notes in Paragraph 66 of its response that “the Department has reviewed the Affiliated and Associated Entities rules on numerous occasions and every time has concluded that they are sufficient to maintain auction integrity.” Quebecor corroborates this view with its observation of the success of the Affiliated and Associated Entities rules as their application to recent auctions in Paragraph 77 of its response [translated]: “We are of the view that these rules have been proven effective because they helped protect the integrity of the auction process.” TELUS concurs with these positions. The Department’s repeated implementation of these same rules in four subsequent auctions seems to be strong evidence that the Department views that auction integrity has been maintained throughout the auction processes.

162. Despite all supporting evidence affirming the current Affiliated and Associated Entities rules, Cogeco raises concerns about the integrity of the auction process given that multiple network sharing partners (TELUS and Bell; Rogers and Videotron) are able to participate as separate bidders. Cogeco expresses its concern about the 600 MHz auction under consultation and also offers its insights on bidding behaviour in the 700 MHz auction, despite not having participated in it (or in any other past Canadian mobile spectrum auction, for that matter). Cogeco seems to misinterpret the Associated Entity rules, which clearly
define association as specifically relating to the spectrum being auctioned – the result of “partnerships, joint ventures, agreements to merge, consortia or any arrangements, agreements or understandings of any kind, either explicit or implicit, relating to the acquisition or use of any spectrum in the 600 MHz band” (emphasis added). The intent of the Department in defining association as specific to the spectrum being auctioned (and not defined by the existence of general network sharing arrangements) was made explicitly clear in the 2015 residual auction, where the definition of Associated Entities was not based on existing 700 MHz or AWS-3 spectrum, but on the “use of any of the spectrum licences in the 700 MHz band or AWS-3 band being auctioned in this [residual auction] process.” In its generalisation of the associated entities rules, Cogeco declares that “Bell and Telus are clearly ‘associated entities’”, implying that we should not be permitted to bid separately.

163. Cogeco continues by highlighting the distribution of sites in TELUS’ and Bell’s networks (which, incidentally, are composed of more than the radio access network alone), taking a critical view of the regional nature of site locations and the way spectrum is subordinated. Based on this view, Cogeco concludes (Paragraph 113) that “the inescapable conclusion is that Bell and TELUS are treating their networks as one.” TELUS disagrees.

164. In Paragraph 66 of its comments, Bell aptly describes potential motivations for competitive bidding between network sharing partners: “Entities that have demonstrated a clear intention to compete against each other in the downstream retail market are motivated to independently source and control their critical network inputs. This leads them to seek access to their own spectrum in order to meet their own subscribers' needs.” TELUS concurs, as it is on this basis that the Department has permitted subordination which would otherwise cause the licensee to exceed the aggregation limit (in bands such as 700 MHz or 2500 MHz, where such a limit exists). The Department’s test for permitting such subordination is one of demonstrating sufficient competition in the applicable service area, with assessment criteria including the provision of service, level of investment (including distribution, marketing and customer service) in order to acquire and serve customers, and the demonstration of separate presences in the marketplace. TELUS and Bell (as well as Ice Wireless, Rogers, SaskTel, Tbaytel, Videotron and others) have repeatedly passed the
Department’s tests under each of these criteria within areas where they subordinate spectrum to one another.

165. Eastlink and Ice Wireless make similar (but less aggressive) claims to Cogeco; like Cogeco, they both ask that TELUS and Bell be forced to bid as a single Associated Entity. TELUS’ response to them is the same as its reply to Cogeco above – as an individual company that competes vigorously for customers in each market that it serves, TELUS must ensure that it acquires spectrum to serve its own subscribers’ needs.

166. Eastlink suggests that through subordination, “Bell and Telus inevitably end up with at least twice the spectrum that any other entity is able to secure.” Ice Wireless claims to observe “the manipulation of bidding to allow aggregation in excess of what is permitted by the licensing framework”, and suggests that such outcomes are detrimental to competition and “not in the best interest of the consumer.” Both of these responses are focused exclusively on the spectrum holdings (MHz), but neglect to consider the volume of subscribers that both Bell and TELUS need to serve. Throughout its response to Question 1 in these reply comments, TELUS illustrates its high spectrum utilisation relative to both Rogers and the regional providers. This holds true when TELUS is examined on its own (i.e., based on TELUS’ spectrum and subscribers) and also when viewing the sum total of TELUS’ and Bell’s subscribers being served on a shared radio access network.

167. Rogers’ response to the Department’s question on the proposed Affiliated and Associated Entities rules is perhaps the most self-serving. First, Rogers reiterates its previous proposal to link the two frameworks for Affiliated and Associated Entities with that of collusion and communication; TELUS addresses this issue in response to Question 9 below, where TELUS provides supporting arguments for maintaining these two sets of rules as separate items (as was the case in previous licensing frameworks) which both serve to effectively maintain auction integrity.

168. Rogers then proceeds to construct three sets of “fallback rules” in a flagrant attempt to reduce competition for itself in the 600 MHz auction, including: imposing a 20 MHz spectrum aggregation limit on bidders; implied association for “existing relationships between the national carriers”; and restrictions on spectrum subordination with a 30 MHz
secondary (post-auction) aggregation limit. TELUS addresses each of these proposals in the following paragraphs.

169. **20 MHz aggregation limit (auction cap):** Unlike Eastlink, Ice Wireless and Shaw (who advocate strongly against TELUS and Bell’s ability to bid separately), Rogers seems to be completely preoccupied with the notion of a “Bell/TELUS joint bid vehicle.” This concern forms the basis for Rogers’ requesting a two block (20 MHz) aggregation limit. It clearly states that the goal of such a cap would be to prevent network partners (i.e., TELUS and Bell) from “bid[ding] together with more bidding power than other bidders.” TELUS notes that in Paragraph 55 of its submission, TELUS in fact supported such an application of a two-block (20 MHz) band cap as a “pro-competitive measure” which would be far preferable to the use of a set-aside. Rogers, on the other hand, seems to be asking for the application of this additional measure (above and beyond a set-aside) in order to ensure its own desirable outcome.

170. **Implied association for existing national network partnerships:** Here again, Rogers proposes a rule specifically designed to limit the competition it would face at auction from TELUS and Bell. Rogers’ proposed limitation would cause TELUS and Bell to be implicitly associated for the purposes of the 600 MHz auction, despite not having any arrangement regarding the acquisition or post-auction use of 600 MHz spectrum. However, by specifying that such an implied association would apply only to national network sharing partners, Rogers conveniently omits its existing network partnership with Videotron (as noted byCogeco). TELUS opposes the application of implied associations for all parties.

171. **30 MHz secondary (post-auction) aggregation limit:** Finally, Rogers proposes that even if network sharing partners do not declare themselves as associated entities (or are not implicitly determined to be, as per Rogers’ proposal above), they should be limited in the ability to subordinate spectrum to each other beyond an arbitrary (30 MHz) secondary aggregation limit. Rogers appears to be trying to put into place a restriction on TELUS and/or Bell that would create an effective set-aside for itself. However, once again, Rogers neglects to recognise its sharing arrangement with Videotron in the Quebec and Eastern Ontario (Ottawa/Gatineau) markets, which cause both Rogers and Videotron to be subject
to this same 30 MHz aggregation limit on the basis of their existing 700 MHz and AWS-1 subordination agreements.

172. TELUS notes that Rogers’ three proposed rules contravene the Department’s well-established framework that has been applied in the previous four auctions, whereby associated entities can apply to have aggregation limits that apply separately and where subordinate licences do not count towards a licensee’s aggregation limit when licensees demonstrate that they meet the criteria with respect to competing in the applicable service areas.

173. TELUS refers those respondents who are critical of the notion of network sharing and who suggest that it provides an unfair spectrum advantage for network sharing partners to Paragraph 45 of TELUS’ reply above.

Q9: Collusion and Communication Rules

Q9—ISED is seeking comments on the proposed rules prohibiting collusion and other communication rules, which would apply to bidders in the upcoming 600 MHz auction.

174. TELUS supports the proposed rules prohibiting collusion and other communication rules, which would apply to bidders in the 600 MHz auction.

175. TELUS notes that all respondents (with the exception of Rogers) are unanimous in supporting the proposed rules, whose wording and framework is unchanged from other recent auctions.

176. In its comments, Rogers persists in confounding the notions of collusion and association in its misguided attempts at creating a unified framework for the two sets of rules. TELUS notes that Rogers has toned down its rhetoric since its response to the AWS-3 Licensing Framework (where Rogers’ allegations of collusion between TELUS and Bell were on the verge on libel); however, Rogers persists in accusing TELUS and Bell of pursuing “coordinated bidding”.

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177. TELUS has previously responded to Rogers’ accusations of collusion and coordinated bidding in the AWS-3 Licensing Framework consultation process. TELUS’ reply comments cited the results of the 700 MHz spectrum auction as strong evidence in opposition of Rogers’ claims (specifically, that TELUS paid significantly more for 700 MHz spectrum than it would otherwise have paid, because of bids tendered by Bell). This pattern was once again borne out in the AWS-3 auction, where competitive bidding for licences in Southern Ontario drove TELUS’ price up substantially beyond Bell’s price. If, as Rogers alleges, network partners knew “exactly how their partner will bid due to their existing network relationship”, tendering such bids would have been irrational. But TELUS’ bids were not irrational – they were tactical, strategic and motivated by a desire (as noted by Bell in Paragraph 66 of its response to the Consultation) to “seek access to their own spectrum in order to meet their own subscribers' needs.” TELUS suggests that Rogers should consider the evidence at hand rather than pursuing a line of specious reasoning that serves only to support Rogers’ own interests.

Q10: Licence Term

| Q10—ISED is seeking comments on its proposal to issue spectrum licences in the 600 MHz band with a 20-year licence term and the proposed wording of the condition of licence above. |

178. TELUS supports the issuance of spectrum licences in the 600 MHz band with a 20-year licence term and supports the wording of the condition of licence as related to licence term.

179. Longer licence terms promote facilities-based competition and will provide licensees pursuing 5G network deployments with investment certainty, but must be coupled with aggressive build requirements to deter spectrum warehousing and speculation.

180. Support for the issuance of licences with a 20-year licence term was also supported by Bell, Eastlink, Quebecor, Rogers, SaskTel and Shaw, as well as many others who widely agreed on the importance of creating an environment which supports investment certainty in the capital intensive wireless market.
Q11: Transferability and Divisibility

Q11—ISED is seeking comments on the proposals on the condition of licence related to transferability and divisibility, and the proposed wording above.

181. TELUS supports the proposed condition of licence related to transferability and divisibility.

182. As noted above in TELUS’ response to Question 1D: If the Department insists on implementing a set-aside in spite of its shortcomings, TELUS supports the proposal to limit the transferability of set-aside spectrum for the first five years of the licence term as did the majority of respondents who answered this question.

183. TELUS recommends the proposed five-year deployment requirements be assessed before the expiry of the prohibition on licence transfer to set-aside ineligible entities. By forcing deployment requirements to be met prior to transfer, the Department will help discourage speculation. TELUS is strongly opposed to permitting the transfer of any set-aside spectrum that has not been deployed. Licences for which the five year deployment requirements have not been met should be revoked in part or in whole by the Department as detailed in TELUS’ response to Question 12.

Q12: Deployment Condition of Licence

Q12—ISED is seeking comments on the proposed deployment condition of licence as stated above.

184. TELUS supports the proposed deployment condition of licence in its approach to applying increasingly stringent deployment requirements throughout the licence term, as did all mobile service providers in their responses.

185. TELUS does not believe that the proposed five-year Tier 2 requirements are sufficient. TELUS suggests that the Tier 2 requirements should at least match the Tier 2 requirements outlined in the AWS-1 Framework\(^{65}\), as the 600 MHz band with its advantageous

propagation characteristics should easily be able to achieve a similar footprint with fewer sites when compared to AWS-1.

186. It appears that TELUS, SaskTel\textsuperscript{66} and Ecotel were alone in pressing for more stringent deployment requirements. This fact provides more evidence of the lack of interest on the part of the set-aside eligible regional providers to deploy their subsidised spectrum beyond urban and suburban markets. Similarly, Rogers seeks clarification that it would only lose the ability to renew the undeployed portions of its licences that fail to meet the various deployment milestones, reinforcing Rogers’ evident disinterest in building rural markets.

187. Breaches of conditions of licence should be addressed by the Department through the Administrative Monetary Penalties (AMP) framework and TELUS suggests two additional measures that would create stronger incentives for infrastructure investment.

188. **Option 1 – Strict “use it or lose it”:** Each licence for which the mid-term deployment requirements have not been met (Tier 2 at 5 years, Tier 3 at 10 years, Tier 4 at 20 years) would be revoked.

189. **Option 2 – Tiered “use it or lose it”:** A less strict approach could be applied upon the assessment of each mid-term deployment requirement:

   a. If Tier 2 deployment requirements are not met at the 5-year mark, all spectrum corresponding to undeployed Tier 3 service areas would be revoked.

   b. If Tier 3 deployment requirements are not met at the 10-year mark, all spectrum corresponding to undeployed Tier 4 service areas would be revoked.

   c. If Tier 4 deployment requirements are not met at the 20-year mark, all undeployed spectrum in the Tier 4 service areas would be revoked. TELUS notes that the full assessment of deployment requirements will be addressed as part of the renewal consultation.

\textsuperscript{66} SaskTel requested stricter deployment requirements from the outset to encourage rural deployment early on in the licence term. They also asked for a stricter Tier 2 requirement for Saskatchewan (40%), which aligns with TELUS’ recommendation of alignment at minimum with the AWS-1 Framework.
Q13: Other Conditions of Licence (R&D, Mandatory Roaming and Subordination)

Q13—ISED is seeking comments on proposed conditions of licence outlined in annex G that would apply to licences issued through the proposed auction process for spectrum in the 600 MHz band.

190. As noted in its comments, TELUS supports the majority of the proposed conditions of licence outlined in Annex G of the Consultation, with the following exceptions consistent with TELUS’ recent submissions to SLPB-002-17 and SLPB-003-17. TELUS strongly advocates that the Department eliminate the R&D COL. With respect to the mandatory roaming COL, TELUS proposes that the entire mandatory roaming framework requires reconsideration in totality. TELUS advocates for change to reduce the administrative burden of annual reporting.

Research and Development Condition of Licence

191. The research and development (R&D) condition of licence, included in all or most mobile spectrum licences since 1991, has run its course and Bell, CWTA, Eastlink, Rogers, Québecor, SaskTel and Shaw have all recently called for its removal entirely along with TELUS. No party in this consultation process has provided any rationale to justify the retention of this COL.

192. TELUS calls upon the Department to remove the R&D COL altogether for all licensees. Such removal would enhance competitiveness as all licensees would be treated equally. TELUS also reiterates that removal of the R&D COL would not cause any negative effects in terms of licensee investment in wireless technology. Canada is a world leader in deployment of advanced wireless networks and capital intensity. Smartphone penetration is extremely strong and customers in Canada consume a massive amount of wireless data.

67 Decisions on Conditions of Licence Regarding Research and Development and Learning Plans, (Canada Gazette SLPB-002-14), February 2014. “In 1983, Cantel (now Rogers) made a commitment in its cellular licence application to purchase handsets from Canadian manufacturers only. This commitment was later modified to a requirement that 2% of the company’s adjusted gross revenues be allocated to R&D with respect to mobile cellular technology and services. In 1991, a similar R&D condition of licence was applied to the regional telephone companies’ five-year cellular special authorizations. This R&D condition of licence is currently incorporated in most long-term spectrum licences.”
Therefore, all licensees already have the competitive impetus to invest in new technology, network deployment and infrastructure upgrades.

193. In fact, removal of the COL actually assists licensees in their capital investments in that they can make those investments that best satisfy the demands of wireless customers, rather than making investments that might satisfy some definition of “R&D.” For the same reasons, Bell has called the R&D COL “both unnecessary and out-of-step with today's modern wireless industry.” In short, the widespread support for removal of this COL is based on ensuring a framework that places maximum reliance on market forces, consistent with the Department’s spectrum policy.

194. Finally, if the R&D COL was rescinded as TELUS recommends, the annual reporting COL would need to be amended to remove the necessity to report on R&D activities.

**Mandatory Roaming for 5G Technologies Should Be for Out-of-Territory Regions Only and for Existing Technologies Should Be Limited to Out-of-Footprint Areas**

195. In its submission, TELUS argued for removal of changes to the mandatory roaming COL. First, TELUS argued that mandatory roaming for 5G technology should be limited to out-of-territory regions only. Second, for mandatory roaming on existing technologies, mandatory roaming should be limited to out-of-footprint areas only. TELUS’ positions are summarised below.

196. First, TELUS pointed out the problems related to indefinite in-territory roaming where 5G technology was concerned. Allowing licensees to obtain roaming for an unlimited period of time in-territory has resulted in some licensees choosing to rely on roaming rather than deploying their licenced spectrum, particularly in areas requiring heavy investments to match the coverage and performance of competing networks. This is a major issue when it comes to 5G technology in that this is a brand new wireless technology that must be built from scratch. No carrier, national or regional, holds an advantage in building out this technology. All carriers must build 5G networks in order to enable this technology.

197. In this light, there is simply no basis for allowing in-territory 5G roaming. To do so would allow some carriers to make decisions whereby they delay deployment or limit deployment
to only certain areas in their geographic licence region. This leads to depressed or delayed construction of 5G facilities, low spectrum utilisation and denial of the benefits of new 5G networks and facilities-based competition for Canadians. As a result, TELUS proposed that any 5G mandatory roaming for the 600 MHz band be only available for out-of-territory geographic areas.

198. Second, in the case where 600 MHz spectrum was being used for non-5G technologies, such as LTE, a licensee would obtain general mandatory roaming rights, but TELUS has proposed that such roaming be limited to out-of-footprint areas only. This change is necessary to avoid the potential of network arbitrage. Network arbitrage occurs when a carrier finds preferable economics in having their customers roam on another carrier’s network rather than building out an expansion of their own network.

199. The application of stringent deployment requirements helps mitigate, though not eliminate, the risk of network arbitrage. As a means to mitigate this adverse outcome, TELUS proposes further rules for in-territory roaming that should apply for roaming on existing technologies. In particular, TELUS elaborates by differentiating the relationship between deployment requirements and mandatory roaming for both out-of-footprint (i.e., beyond a mobile network operator’s claimed network coverage) and in-footprint (within their network coverage) scenarios.

200. In the out-of-footprint scenario, the presence of strict deployment requirements helps in mitigating opportunities for network arbitrage. Specifically, when deployment requirements are imposed, a spectrum licensee must provide some form of economic contribution towards facilities-based competition, either through direct investment in infrastructure that provides network facilities for expansion into previously unserved markets, or through the indirect support (via spectrum subordination) to a provider making the infrastructure investment in a surrogate role.

201. On the other hand, in the in-footprint scenario, the introduction of strict deployment requirements is insufficient in addressing TELUS’ concerns with mandatory roaming – an outcome which TELUS observes is taking place with alarmingly increasing frequency in urban and suburban settings. Here, network arbitrage is the result of a decision to "under-
deploy” (i.e., fail to continue infilling the network and deploying indoor and small cell coverage) within an operator’s network footprint, while choosing to rely on artificially depressed rates, which arise, as the near-certain outcome of commercial negotiation turning to arbitration.

202. In TELUS’ view, the only way to close this loophole is to eliminate the requirement for providing in-footprint roaming. Elimination of such a requirement is primarily justified by the demise of circumstances that drove its adoption. While mandatory roaming was originally conceived as a facilitator for new entrants nine years ago, all new entrants are now well-established regional players and have the ability to obtain roaming by way of CRTC tariff, meaning that the Department’s rules with respect to mandatory roaming are unnecessary for them. In addition, these rules were never intended for incumbents to exploit; TELUS does not believe that the consequent reduction in facilities-based competition was an intended outcome of the Department’s original and modified rules.

203. Finally, and in any event, TELUS has asked for a general review and reconsideration of the mandatory roaming COL in totality. With the anticipated roll-out of new 5G technologies, the financial capability of well-capitalised regional providers and the existence of a CRTC mandatory roaming tariff, the need for the Department to impose a mandatory roaming COL should be put to in-depth review.

204. Rogers has supported the continuation of mandatory roaming as stipulated in the current COL. In response, Rogers’ position arises because of its desire to rely on roaming for immediate and indefinite coverage, even in its licence areas and even where it has network. This is clearly against the interests of the Department’s spectrum policy and the efficient utilisation of spectrum. Moreover, there is simply no basis for a licensee the size of Rogers to rely upon a COL to obtain roaming. Surely it is in the position where it could either negotiate roaming arrangements with other licensees, or failing that, put capital investments into its network to directly serve its customers. For Canada’s largest wireless carrier to demand mandatory roaming that was originally designed to assist new entrant competitors casts considerable doubt into the validity of mandatory roaming COL in general.
205. On a related point, Cogeco and Eastlink support the COL, but raise allegations about the mandatory tower sharing component of the COL. As an example, Eastlink claims significant delays in accessing towers of other licensees.

206. TELUS notes that Eastlink does not raise specific allegations. It is impossible to respond to a general statement by Eastlink. In any event, the Department has put in place reporting requirements for all licensees to report on their towers and sites where facilities are shared. This reporting evidence demonstrates TELUS’ good faith adherence to the tower sharing COL. There might be individual circumstances where delays might occur, arising from engineering or site challenges, but such circumstances are usually dealt with between the parties without incident.

207. In TELUS view, rather than raising accusations in a general review of the COL, Eastlink, or any licensee, should raise specific issues relating to tower sharing immediately with the other licensee for action or resolution. Mandatory arbitration processes are also available to resolve tower sharing disputes. No additional Department action is necessary based on the general statements of Eastlink.

**Subordination Is a Right of the Licensee**

208. TELUS did not comment specifically about the subordination rights afforded under the proposed COL, and relied on its general statement that it supported the proposed COL. In its submission, the BCBA demand a “requirement” for licensees to respond to requests for sub-licensing, and to provide a “reasonable” justification for any refusal of a subordination request.

209. In reply, BCBA’s requests must be dismissed by the Department. Licences are obtained at auction and a licensee’s obligation is to follow the COLs as stipulated by the Department. Subordination of a licence to another entity is a right afforded under the COL, but it is not a requirement. No third party has the right to demand subordination, and a licensee has every right to refuse subordination requests.
210. The BCBA’s requests interfere with licensee rights and introduce a notion that a licensee must act in the interests of third parties, rather than in its own best interests. Such a regime would be contrary to facilities-based competition and reliance on competitive market forces.

**Q14: Opening Bids**

**Q14**—ISED is seeking comments on the proposed opening bids as presented in table 1.

211. As mentioned in its comments, TELUS does not support the proposed opening bids as presented in Table 1 of the Consultation. Highly competitive open auctions without set-asides should have opening bids low enough so as to permit price discovery across a full range of potential bidder valuations. The competitive nature of an open auction will in return ensure that market value is paid for all spectrum, thus guaranteeing an appropriate compensation to Canadian taxpayers.

212. The Department seems to recognise that this is not the case for set-aside spectrum. By selecting opening bids that reflect the lowest end price of the 700 MHz auction, the Department seems to be trying to set opening bids high enough such that the proposed 30 MHz of set-aside spectrum (that will almost certainly sell at or near the opening bid price) is not seen as being given away while shortchanging Canadian taxpayers.

213. The Department needs to decouple these objectives by either:

   a. Abandoning the set-aside and holding either an open auction or an auction with a band cap or an aggregate sub-GHz spectrum cap, or

   b. Making the set-aside conditional on clock round prices exceeding a certain threshold, as discussed in TELUS’ response to Question 7.

214. Once the set-aside is abandoned or made conditional, the Department can focus on setting the opening bids to facilitate price discovery. In TELUS’ view, these proposed opening bid prices are too high for that purpose. The Department’s proposed methodology for determining opening bid prices is based on the attribution of 700 MHz auction payments to service areas in proportion to the relative final clock prices. The proposed methodology
and resulting prices do not account for the differences between the 600 MHz band today and the 700 MHz band at the time of the 2014 auction. The 600 MHz band provides more available spectrum for bidders than was available in the 700 MHz band. The 600 MHz band offers a single unified ecosystem (as compared to the bifurcation of the Upper and Lower 700 MHz band), albeit one that has only recently been standardised and is still under development. The 600 MHz band is just entering the early stages of a 39+ month television transition process, whereas spectrum in the 700 MHz band was available for use immediately following the auction. For all of these reasons, the opening bid prices in this auction (once the set-aside is removed or made conditional) must be decreased in order to provide bidders with opportunities for thorough price discovery.

215. Several of the respondents who would qualify as set-aside eligible bidders attempt to argue that the opening bids should be lower. Videotron argues that opening bids should be based on the average of the four most recent auctions – AWS-1 in 2008, 700 MHz in 2014, AWS-3 in 2015 and 2500 MHz in 2015. Videotron is, in effect, suggesting opening bid prices of approximately $0.20 / MHz-pop versus what is currently being proposed by the Department ($0.625 / MHz-pop). Videotron fails to account for the true market value of the subsidised spectrum it acquired at auction by neglecting to suggest the Department consider the valuations it achieved through its spectrum flipping activities (which incidentally further subsidised its spectrum purchases, again at the expense of Canadian taxpayers). Videotron, as mentioned previously, is well funded with a strong balance sheet and has benefited from subsidies in all four of the most recent auctions. In both the 700 MHz and AWS-3 auctions Videotron acquired spectrum at or near reserve prices which were in turn well below the open auction prices. If set-asides in the current form are to remain in place, TELUS argues that the opening bid prices should be higher in the set-aside to reflect the true value of the underlying spectrum; Videotron should not be able to continue enjoying the level of subsidy that it has enjoyed in prior auctions at the expense of Canadian taxpayers.

216. Some other respondents, including CCI and Tbaytel, felt that opening bids should be lower but with a different rationale. CCI believes that the opening bid prices in all Tier 2 regions should be $0.133/MHz-pop in line with the proposed opening bid level of the three sparsely populated northern regions. Tbaytel disputes the appropriateness of the opening bid price
($0.36/MHz-pop in Northern Ontario), but suggests that with their proposed division of the market into smaller licence areas, would accept that opening bid price. Ice Wireless proposes that the open bid prices should be half of what the Department has proposed in the consultation, and suggests that in smaller areas such as the Territories, high opening bids only serve to artificially inflate the value of the spectrum.

217. While TELUS recognises the funding constraints of the smaller bidders, the fact is that under the Department’s proposal, there is a very high probability that the set-aside spectrum would ultimately be awarded at or near reserve to well-capitalised family controlled regional providers. In TELUS’ view, this outcome would not be in the best interests of the Canadian taxpayer unless the set-aside is made conditional or the opening bids for any set-aside spectrum is set at a level at least 50% higher than initially proposed.

Q15: Eligibility Points and Pre-Auction Deposits

**Q15—ISED is seeking comments on the proposed eligibility points for spectrum licences in the 600 MHz as outlined in table 2, and pre-auction deposits as outlined above.**

218. In TELUS’ response to Question 14, it highlights the flaws in the Department’s proposed opening bids and suggests modifications to rectify these flaws (increasing opening bids if the set-aside is retained and not made conditional, or lowering them if the set-aside is removed or made conditional). TELUS supports the methodology proposed for determining the eligibility points associated with each licence, but notes that the values may need to change if the relative prices of the opening bids are modified. Assigning a single eligibility point to the opening bid price associated with the lowest population service area is appropriate (i.e., 4-170 Yukon, sets the correspondence of $48,000 per eligibility point under the proposed opening bids), as is scaling the eligibility points according to each licence’s opening bid value and rounding eligibility to the nearest ten points in all service areas with the exception of the North.

219. TELUS also supports the deposit process proposed in the Consultation, with deposits proportional to the number of eligibility points on which each applicant wishes to be eligible to bid. The financial deposit should be scaled to the base price for a single eligibility point
(the opening bid for the 4-170 Yukon licence) as described in the previous paragraph, so that the financial deposit for a given number of eligibility points closely approximates the opening bid for that level of eligibility.

220. While most of the respondents appear to have been in support of the proposal by the Department or elected not to comment, a small number of respondents believe that changes are required to the deposit process. BCBA requests that the requirement for pre-auction deposits be reduced by 50% for entities with less than $10 million in annual revenues, noting that the pre-auction deposits represent a challenge for smaller companies which may deter them from participating in the auction. It is TELUS’ view that the proposed deposits commensurate with opening bid levels are important in helping to discourage speculation which could put spectrum in the hands of companies who ultimately have no interest in deploying it, resulting in the spectrum laying fallow for an extended period of time.

221. Videotron proposes that in order to reduce the financial costs imposed on bidders, the Department should extend the deadline for the submission of deposits as late as reasonably possible during the pre-auction process. Shaw addresses a different financial question (of final payments), and proposes a delayed payment schedule such that 50% is paid upfront and the remaining 50% is paid only once the TV transition out of the 600 MHz band is complete and the Tier 2 spectrum holdings can be put into use.

222. Given the heavy financial burdens imposed on bidders in prior auctions, TELUS has no issues with the proposals put forward by Videotron and Shaw in the above paragraph.

**Q16: Renewal Process**

**Q16**—ISED is seeking comments on the proposed renewal process for spectrum licences in the 600 MHz band.

223. TELUS supports the proposed renewal process for spectrum licences in the 600 MHz band. The proposed renewal process was supported by all respondents (other than the few who elected not to comment).
Before Innovation, Science and Economic Development Canada

SLPB-005-17
August 2017

REPLY EXPERT REPORT OF CHRISTIAN M. DIPPON, PH.D.
On Behalf of TELUS Communications Inc.

Consultation on a Technical, Policy and Licensing Framework for Spectrum in the 600 MHz Band

November 3, 2017
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Reply Expert Report of Christian M. Dippon, PhD

I. QUALIFICATIONS

1. I am the same Christian M. Dippon who filed an expert report in this matter on October 2, 2017.1 Appendix A of my initial expert report sets forth my qualifications. In addition to the work performed in forming the opinions expressed in my initial expert report and my ongoing research of this topic, I have reviewed the comments of Shaw Communications Inc., 2 Quebecor Media Inc., 3 Cogeco Communication, 4 Bragg Communications Inc., 5 Ice Wireless Inc., 6 Rogers Communications Canada Inc., 7 and Bell Mobility Inc.8 I have also read the comments filed in this proceeding by various other parties.

2. I may revise and supplement my opinions herein upon further review and analysis of any new data, materials, expert reports, and testimony.

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II. PURPOSE OF THE REPORT

3. This report was prepared at the request of TELUS in response to the comments filed on October 2, 2017, regarding Innovation, Science and Economic Development Canada’s (ISED’s) Consultation on a Technical, Policy and Licensing Framework for Spectrum in the 600 MHz Band, Notice No. SLPB-005-17. Specifically, TELUS requested that I review and respond, where necessary, to comments addressing procompetitive measures, set-asides in particular. As described in my initial expert report, “the evidence in this matter does not support the introduction of pro-competitive measures in the upcoming 600 MHz auction.”\(^9\) I recommended, “[T]he set-aside proposal or any other so-called pro-competitive measures should be rejected.”\(^10\) My review of the extensive comments filed in this proceeding confirms and supports my conclusion. Therefore, my recommendation stands.

4. This report is structured as follows. Section III provides a summary of findings, which highlights that the comments filed by the parties that stand to benefit from the set-aside proposal are unsupported, economically incorrect, and aimed at enriching their respective bottom lines. I provide a brief introduction in Section IV. Section V addresses Shaw/Freedom and the report authored by Dr. Peter Cramton. In Section VI, I reply to Quebecor Media. Section VII presents my review of Cogeco. In Section VIII, I reply to Eastlink. Section IX continues with my review of Ice Wireless. Section X briefly addresses the comments filed by various other parties. I conclude in Section XI. Due to

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\(^9\) Dippon, ¶ 8.
\(^10\) Ibid., ¶ 113.
the extensive volume of the comments filed in this matter, I do not address the comments filed by Rogers and Bell.

5. I refer to TELUS, Rogers, and Bell as nationwide providers. The remaining parties that filed comments consist of regional providers, incumbent fixed-line and cable providers, foreign entities, trade associations, and other interested groups. I refer to them collectively as the Other Respondents.

III. SUMMARY OF FINDINGS

6. The Other Respondents’ comments focus largely on the state of competition in the mobile wireless sector and ISED’s set-aside proposal. Under ISED’s proposal, all Other Respondents would be eligible for set-aside spectrum. Thus, unsurprisingly, regarding the state of competition, the Other Respondents’ arguments range from claims of limited competition to allegations of market power. Accordingly, the Other Respondents find set-asides necessary, although parties request various modifications to the ISED proposal, including increasing the amount of set-asides, changing the eligibility criteria, and introducing spectrum caps within the set-asides licenses. Essentially, the debate centers on providing additional preferential treatment to the regional providers with each party seeking to optimize its competitive position in the auction and the marketplace.

7. I have carefully examined the comments about competition and the alleged need for set-asides and found them to be inconsistent with sound economic principles and public policy. None of the Other Respondents conducted a competition analysis despite agreeing that lack of competition is a prerequisite for set-asides. The anecdotal evidence and incorrect claims submitted in lieu of a competition analysis are insufficient to warrant any procompetitive measures. Particularly troubling is the heavy reliance on a statement by
the Competition Bureau in its investigation of the Bell-MTS merger. The Competition Bureau made this statement when examining a completely different situation and it has no bearing in the present proceeding. Therefore, it cannot serve as a carte blanche for procompetitive measures such as set-asides. Instead, I urge ISED to review the detailed competition analysis conducted by Dr. Jeffrey Eisenach that the expert submitted in response to the CRTC’s Telecom Notice of Consultation CRTC 2017-259. Dr. Eisenach clearly shows that the Canadian mobile wireless market is competitive. Consequently, procompetitive measures are not required.

8. The Other Respondents’ comments also reveal a fundamental misunderstanding of the objective of set-asides. The objective of this and other procompetitive measures is not to enrich the bottom line of an eligible provider or to ensure that it has the same amount of spectrum as others. It also does not ensure that all eligible bidders will win spectrum. Rather, it ensures that no bidder increases its maximum willingness to pay simply to keep others out, thereby enabling it to charge supracompetitive rates in the post-auction market. In short, set-asides are to protect Canadian consumers, not the profitability of any particular bidder. Seemingly not understanding the objective of set-asides, the Other Respondents argue that they deserve the spectrum as they have less low-frequency spectrum than others do, that they do not have the financial resources of the nationwide providers, and that they need to be protected against “the incumbents.” Interestingly, other than stating that regional providers have provided consumers benefits in the past, the Other Respondents offer no meaningful evidence that the benefits from set-asides in the upcoming 600 MHz auction would flow through to Canadian consumers.
9. Overall, the Other Respondents’ comments lack proper analyses and evidence, particularly with respect to competition, and their recommendations to ISED are targeted to support their respective business cases with little to no consideration of the Canadian consumer.

10. My specific findings are as follows.

   • Shaw/Freedom presents an array of anecdotal and incorrect evidence in support of its equally incorrect claim that the relevant market is not competitive. The respondent does not explain why the sum of the three nationwide providers’ market shares offers any insight into competition. Canada’s three nationwide providers are individual competitors, not a single economic entity. Shaw/Freedom also does not understand the limits of the Competition Bureau’s findings in the Bell-MTS merger and fails to understand that the Competition Bureau settled the matter without admission or litigated proof of the existence of the alleged coordinated effects. The respondent incorrectly uses churn rates and penetration rates as indicators of competition. There is no clear correlation between these two metrics and competition, and Shaw/Freedom offers no evidence of such.

   • Shaw/Freedom also relies on the expert report of Dr. Emch filed in CRTC 2017-259. However, the report adds no value in this proceeding. Dr. Emch simply summarizes the Competition Bureau’s findings and reproduces a table from a Nordicity study. I previously addressed the inadequacy of the Competition Bureau’s finding. Dr. Eisenach explained the shortcomings of the Nordicity study in his testimony in CRTC 2017-259.

   • Shaw/Freedom claims that it struggles, and that the nationwide providers are at fault for its struggles. Shaw/Freedom’s statements to its shareholders do not support this claim and its struggles are not relevant to the current situation. The objective of set-asides is not to eliminate any individual firm’s struggles but to protect consumers from an exercise of market power.

   • Shaw/Freedom observes that the three nationwide providers hold most spectrum licenses and leaps to the conclusion that this concentration leads to market power. To
support its claim, Shaw/Freedom cites to the testimony of Dr. Baker. While it is correct that the nationwide providers have larger spectrum holdings than some of the regional providers, spectrum imbalance is not a relevant consideration of set-asides. As long as the market is competitive, the auction mechanism reveals the market price—a price that all bidders, large or small, must pay. Shaw/Freedom also misquotes Dr. Baker’s expert report by claiming that spectrum concentration leads to market power. Dr. Baker was much more careful in wording his statement (which he made in a different context), and it does not apply to the present situation.

- Shaw/Freedom alleges that it does not have equitable access to low-frequency spectrum. This statement is incorrect. Given the competitive conditions in the relevant market, Shaw/Freedom has the exact same access to the 600 MHz spectrum as any other bidder, even without set-asides. What Shaw/Freedom really wants is to pay less for spectrum than other bidders do.

- Shaw/Freedom claims that it needs low-frequency spectrum to innovate and overcome its alleged challenges. This statement does not align with the fact that Shaw/Freedom recently acquired 700 MHz (and 2500 MHz) spectrum from Videotron but has not yet announced its deployment.

- Shaw/Freedom claims that the 600 MHz spectrum is more valuable to “new competitors” than to the nationwide providers but offers no evidence, and there is ample reason to believe that this claim is incorrect.

- With respect to Shaw/Freedom’s responses to ISED’s questions, the respondent provides no economic justification for set-asides, does not explain why increasing the set-aside amount from 30 MHz to 40 MHz should be in the public interest, and glances over the flaws of the proposed eligibility requirements.

- Shaw/Freedom appends the expert report of Dr. Cramton that allegedly provides support its position. Dr. Cramton’s study should not carry any weight in ISED’s decision on set-asides. Dr. Cramton admits that a competition analysis must precede set-asides but offers no serious evidence that the Canadian market place is not competitive. He simply declares the market uncompetitive by citing a few selected statistics—none of which is relevant or sufficient for a proper competition analysis. Dr.
Cramton then argues for an increase in the amount of set-aside, but other than making a few unsupported statements offers no evidence why such increase should benefit consumers. Equally unsupported is Dr. Cramton’s claim that without set-asides the regional providers would be foreclosed from the 600 MHz auction. Dr. Cramton’s historical review of set-asides is meaningless because he does not establish why an auction in the United States from 1996 should be informative to ISED in deciding on its set-aside proposal.

- Quebecor Media asserts undeniable benefits to Canadian consumers from the entry of regional providers and then cites to the Competition Bureau’s statement in the Bell-MTS merger as to why its needs set-asides. While Quebecor might well be providing benefits to its subscribers, the relevant consideration is the competitiveness of the Canadian mobile wireless market. Yet, other than the Competition Bureau’s merger claim and a report from Nordicity, the respondent provides no evidence of a lack of competition in Canada. Neither of these anecdotal claims are applicable to the present proceeding. Quebecor Media cites to the merger between Hutchinson and Telefonica UK as an example of why regulators view four operators as necessary for a competitive environment—a point that is moot as the Austrian regulator approved a merger that reduced the number of providers from four to three.

- Quebecor Media highlights that it does not possess as much low-frequency spectrum as the nationwide providers. This, however, is irrelevant as the respondent is free to acquire additional spectrum in the upcoming spectrum auction at market prices.

- Interestingly, Quebecor Media claims that the nationwide providers have previously foreclosed regional operators from obtaining spectrum by citing to the 2008 AWS-1 auction. This claim is factually incorrect and makes little economic sense. In fact, it would demonstrate that set-asides are ineffective.

- Quebecor Media recommends increasing the set-aside amount to 40 MHz. Its justification is that an increase would address the spectrum imbalance. However, set-asides are not designed to address spectrum imbalances, as Quebecor Media is free to obtain spectrum at its current market price.
Quebecor Media’s recommendation to increase the resale prohibition from five years to ten years is against the public interest. Spectrum is scarce and needs to be deployed most efficiently. If this requires reselling the spectrum on the secondary market, this should happen sooner rather than later. ISED can refrain from set-asides altogether to address the concern that a shorter prohibition period would enable speculation.

Cogeco presents a series of seemingly random research findings, none of which are applicable. For instance, Cogeco claims that Canada has some of the highest retail rates in the world. The only support for this broad claim is a research report that compares the amount of data that subscribers in various countries can purchase for 30 Euros. Not only is this insufficient to support Cogeco’s claim, but because Canada does not appear to be materially different from the United States in the research report, also fails to align with the Other Respondents’ statements that the U.S. market is competitive.

Cogeco demand that regulation is implemented that leads to more than two or three facilities-based providers. This statement is incorrect and troublesome. All provinces, except Manitoba, already have four facilities-based regional operators. More importantly, economic forces, not regulation, should determine how many providers a region can sustain.

With respect to Cogeco’s responses to ISED’s questions, the respondent provides no support why set-asides are needed, why the amount of set-aside spectrum should be increased, and why the respondent should be eligible to obtain set-aside spectrum.

Eastlink proposes to ISED that the auction design grant bidders with limited resources preferential treatment. This is simply bad public policy as it skews the competitive outcome and provides no clear benefits to Canadian consumers.

Eastlink offers no justification for set-asides. In fact, the respondent simply offers it support for the proposal as if ISED were seeking a vote (rather than supported response).

Ice Wireless does not provide any justification for its recommendation to accept the set-aside proposal.
- Sasktel acknowledges that there is an economic limit to the number of viable competitors a market can sustain. This is correct, applies to all markets in Canada, and must be an important consideration in ISED’s decision on set-asides.

- Tbaytel claims that a fourth choice of provider is desirable. Only the market can determine whether this is the case. In the presence of competitive forces, market entry should not be created by regulatory design.

- Xplornet seeks a spectrum cap on the set-aside spectrum to achieve a more even distribution of the spectrum. If even distribution were ISED’s objective, then the Department could simply allocate the spectrum in equal proportions. It is also worthwhile noting that Xplornet owns significant amounts of spectrum in Manitoba but has not yet entered as the fourth operator in the region.

11. My overall assessment of the Other Respondents’ comments with respect to competition and set-asides confirms my prior findings. There is no credible evidence that the market is not competitive and that the benefits from receiving set-aside spectrum would flow through to Canadian consumers. My recommendation to ISED is to reject the set-aside proposal and any other procompetitive measure for that matter.

IV. INTRODUCTION

12. My initial expert report examined whether the current market structure necessities pro-competitive measures and whether the proposed set-asides stand to benefit Canadian consumers. I also provided responses to ISED’s questions Q1A-Q1D. I concluded that the Canadian market for mobile wireless service is competitive. Relying on the bidding behavior in the AWS-1 auction, I explained that set-asides restrict spectrum supply to non-eligible providers and open these bidders up to fake bidding. This, in turn, leads to an upward pressure in prices and a general decline in quality of service. Based on these and
other considerations, I recommended against the adoption of the proposed putatively pro-
competitive measure.

13. Various parties filed their own recommendations with respect to set-asides. In the
following, I reply to the parties who recommended implementing the set-aside proposal.
My reply focuses on two aspects: (a) justification or lack thereof of pro-competitive
measures, and (b) the respondents’ evaluations of the set-aside proposal.

V. **REPLY TO THE SHAW/FREEDOM COMMENTS**

14. Shaw/Freedom responded to the questions raised in the consultation and attached a paper
titled “The Critical Importance of the Set-aside in the Canadian 600 MHz Auction,”
authored by Dr. Peter Cramton.

15. Shaw/Freedom argues that the Canadian market for mobile wireless services is not
sufficiently competitive and that the introduction of a “dynamic, new ecosystem” requires
procompetitive measures.\(^{11}\) The respondent believes that spectrum is concentrated among
the incumbents, is critical for new competitors, and unless set-asides are implemented the
incumbents will foreclose new competitors. To support its arguments, Shaw/Freedom
attached the Cramton Paper. In the following, I address each of these claims, including
those raised in the Cramton Paper.

A. **Shaw/Freedom Fails to Prove the Need for Set-Asides**

16. A central point in Shaw/Freedom’s support for spectrum set-asides is an alleged lack of
competition. Shaw/Freedom states that competition ensures “long-term success in the
global, innovation economy,” improves “the lives of all Canadians,” and drives

\(^{11}\) Shaw/Freedom, ¶ 16.
“affordability, as it promotes pricing discipline and more valuable offerings to consumers.” Thus, Shaw/Freedom’s entire argument hinges on its claim that the relevant market is not competitive. Yet, surprisingly, Shaw/Freedom offers no meaningful analysis or even secondary evidence of the need for procompetitive measures, set-asides in particular. Shaw/Freedom presents a seemingly random array of irrelevant facts, misquoted headlines, and incorrect statements. Absent any incontestable evidence of the need for additional procompetitive measures, the remainder of Shaw/Freedom’s comments is arguably irrelevant.

1. **Anecdotal Evidence Is Not a Substitute for a Competition Analysis**

17. Presenting market shares at either the subscriber or the revenue level and summing them does not constitute a competition analysis. Moreover, vague references to coordinated pricing and other indicators, such as average monthly churn rates and subscriber penetration rates, does not constitute a competition analysis. Yet, in the remainder of Shaw/Freedom’s comments, the respondent ignores the fact that it never examined market forces and boldly states, “Given the evidence of the need for more competitive pressure in Canada’s mobile wireless market….” Shaw/Freedom has not offered any evidence. This is in stark contrast to the detailed analysis conducted by Dr. Jeffrey Eisenach, as summarized in my initial expert report.

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12 Ibid., ¶ 18.
13 Ibid., ¶ 17.
14 Ibid., ¶ 21.
15 See Dippon, ¶¶ 38–40.
18. Dr. Eisenach’s study finds that the mobile wireless market in Canada is competitive.\textsuperscript{16} Dr. Eisenach considered various metrics in this multi-dimensioned market, including the pace of 4G LTE deployment, 4G LTE accessibility, mobile wireless connectivity, average connection speeds, smartphone ownership, and data usage. Dr. Eisenach also examined the impact of the high spectrum prices in Canada. This point is particularly important as set-asides further increase spectrum prices. This, in turn, increases retail prices and decreases the quality of service.\textsuperscript{17} It also suppresses network investments, which particularly affects rural areas.

2. Summing National Market Shares Is Incorrect

19. The fact that “the national wireless incumbents continue their hold on over 90\% market share” is meaningless.\textsuperscript{18} Summing the market shares of the three nationwide providers ignores that Rogers, Bell, and TELUS compete not only with other providers but also with each other. The combined entity that Shaw/Freedom refers to as “the incumbents” does not exist. Rather, there are three different nationwide competitors with no signs of collusion, implicitly or explicitly. It is also unclear why Shaw/Freedom refers to the nationwide providers as incumbents when Freedom itself is an active mobile wireless provider (it has been offering mobile wireless service since 2008 under the retail name Wind). I also note that Shaw is an incumbent cable provider.


\textsuperscript{17} See Dippon, ¶¶ 60–92.

\textsuperscript{18} Shaw/Freedom, ¶ 17.
20. Relatedly, by focusing on national market shares, Shaw/Freedom ignores the fact that the regional providers have chosen to focus on niche markets. As explained in my initial expert report:

Shaw/Freedom’s limited nationwide market share is not the result of competition but the result of its deployment strategy. The company’s network only covers about 45 percent of the nation, and it lags in upgrading its network to the most recent technology. Shaw/Freedom made this strategic choice because it was targeting the niche containing entry-level subscribers. Although there is nothing wrong with such a strategy, it is not the result of competition but of choice. It is also not a requirement to provide the latest technology as entry-level mobile wireless consumers are often content with basic service options.¹⁹

3. The Nationwide Providers Do Not Control Their Subscribers

21. Despite Shaw/Freedom’s proclamation, Rogers, Bell, and TELUS do not control any subscribers.²⁰ This point is more than semantics as control implies that each of these competitors has the ability to profitably raise retail prices. As Dr. Eisenach’s study has shown, they cannot. If TELUS were to increase prices, subscribers would switch to Bell, Rogers, Freedom, or any other mobile wireless provider.

4. The Competition Bureau’s Finding Does Not Justify Set-Asides

22. Shaw/Freedom makes reference to a finding by the Competition Bureau that reportedly “confirmed that coordinated pricing takes place between the three national incumbents….”²¹ Although I am not privy to the details of the Competition Bureau’s findings, even assuming that there is coordinated behavior, this does not substantiate the need for set-asides. From reviewing the summary of its analysis, “The Bureau tested the coordinated effects theory empirically by comparing Rogers, TELUS and Bell’s internal

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¹⁹ Dippon, ¶ 18.
²⁰ Shaw/Freedom, ¶ 17.
²¹ Ibid.
pricing data in markets with and without a strong regional carrier.”

First, it is unclear how the Competition Bureau defined these markets. This is an important missing element. For instance, defining the market as a province might be misleading if competition varies across the provincial footprint. Similarly, if the Competition Bureau defined markets as an urban area, then this might be equally misleading because the providers’ serving areas might not align with these defined markets.

Second, it is also unclear what the Competition Bureau considers a “strong regional carrier.” Randomly eliminating competitors does not represent a proper competitive assessment. While a competitor may appear weak today, it can still discipline the market. If the nationwide providers were to decide to charge supracompetitive prices, then a seemingly weak competitor would benefit from this and have the potential to become strong almost immediately. It is important to note that the elimination of weak regional providers introduces a survival bias as it eliminates all regional providers that have attempted to undercut the prices offered by the nationwide providers and have failed and thus have exited the market.

Third, and likely most important, the Competition Bureau did not find that the Canadian mobile wireless market was not competitive. If anything, it found regional pockets in this market where it believed that a fourth choice might improve prices. Yet, Shaw/Freedom portrays this finding as if the entire nationwide mobile wireless market exhibited coordinated behavior. This is not the case. As shown in Table 1, all provinces in Canada with the exception of Manitoba offer four choices of mobile wireless providers.

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23 Ibid.
Manitoba, however, the conditions of the Bell-MTS merger enabled Xplornet to fulfill the function of the fourth provincial choice. Thus, even if this finding were accurate, it is not applicable at the national and the provincial levels but rather is limited to some unidentified markets in which there is no strong fourth choice. If coordinated behavior is only present in some areas of the nation, it follows that in all other areas there is no coordinated behavior. Accordingly, by the Competition Bureau’s own findings, set-asides are not justified on a nationwide basis.

<table>
<thead>
<tr>
<th>Province</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontario</td>
<td>Bell, TELUS, Rogers, Eastlink, Freedom</td>
</tr>
<tr>
<td>British Columbia</td>
<td>Bell, TELUS, Rogers, Freedom</td>
</tr>
<tr>
<td>Quebec</td>
<td>Bell, TELUS, Rogers, Freedom, Videotron</td>
</tr>
<tr>
<td>Alberta</td>
<td>Bell, TELUS, Rogers, Freedom</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>Bell, TELUS, Rogers, Eastlink</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>Bell, TELUS, Rogers, SaskTel</td>
</tr>
<tr>
<td>Newfoundland and Labrador</td>
<td>Bell, TELUS, Rogers, Eastlink</td>
</tr>
<tr>
<td>Manitoba</td>
<td>Bell MTS, TELUS, Rogers</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>Bell, TELUS, Rogers, Eastlink</td>
</tr>
<tr>
<td>Prince Edward island</td>
<td>Bell, TELUS, Rogers, Eastlink</td>
</tr>
<tr>
<td>Yukon</td>
<td>Bell, TELUS, Rogers, Ice Wireless</td>
</tr>
<tr>
<td>NW Territories</td>
<td>Bell, TELUS, Rogers, Ice Wireless</td>
</tr>
<tr>
<td>Nunavut</td>
<td>Bell, TELUS, Rogers, Ice Wireless</td>
</tr>
</tbody>
</table>

Notes and Sources: TeleGeography, Canada, pp. 39-48

25. Fourth, the Competition Bureau also does not reveal the details of how it distinguished cause and causation. There is insufficient information available to determine whether high prices are caused by the lack of a strong regional provider or whether the lack of a strong regional provider is caused by high prices, which could be indicative of high costs. For selected areas where the Competition Bureau claims to have considered causation, it found that “these differences in price could not be explained by factors such as quality,
differences in demand or demographics, but instead were based on the existence or non-existence of a strong regional competitor.” Assuming that this is accurate, this purported causation analysis misses the fact that regional providers focus on specific niche markets and have not announced any intention of becoming nationwide providers or even of offering services outside their traditional footprints. As profit maximizing firms, it would seem logical for a regional provider to offer services in areas where its business case is most favorable. With prices constrained by market forces, regional providers enter in areas where their costs are the lowest. Conversely, the regional providers do not enter markets where costs are higher. Hence, it is no surprise that in areas without a strong regional provider prices are higher. Prices are higher because costs are higher (detering regional providers from entering), not because of an absence of a strong regional provider.

26. Fifth, the results of a merger review should not be used for policymaking. The Competition Act (R.S.C., 1985, c. C-34) tasks the Competition Bureau with reviewing mergers “to determine whether they will likely result in a substantial lessening or prevention of competition.” The task is not to assess the level of competition in Canada. Rather, the Competition Bureau’s threshold to deny a merger or seek conditions is the likely lessening or prevention of competition post acquisition. The Competition Bureau’s obligation is further restricted as it focuses exclusively on the merger at hand. This responsibility is distinctly different from the policy objectives set forth by ISED in the present public consultation. Specifically, ISED lists the fostering of innovation and

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24 Ibid.
investment, supporting sustained competition, and facilitating network deployment as its main policy goals. Given the different assignments, it is not surprising that the Competition Bureau approved the merger, albeit with conditions. If the Competition Bureau truly believed in “the need for more competitive pressure in Canada’s mobile wireless market,” as alleged by Shaw/Freedom, then one could have reasonably expected the Competition Bureau to intervene as preventing abuses of market power is one of the Competition Bureau’s other principal responsibilities.\footnote{\textsuperscript{26} Blair/Freedom, ¶ 21.} \footnote{\textsuperscript{27} Canada Competition Bureau, “Preventing abuse of market power,” http://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/h_02758.html.}

27. Sixth, the Competition Bureau did not intervene in the merger but approved it with conditions. That is, the Competition Bureau settled its concerns by requiring the merged entity to divest certain subscribers and assets. By settling, the Competition Bureau did not have to prove its allegations and the merging parties did not have to disprove them. Thus, unlike portrayed by Shaw/Freedom, the coordinated effects have never been proven. This is not to suggest that ISED should ignore the finding. However, it must perform a careful examination and determine whether the results are applicable and sufficiently robust to warrant procompetitive measures. Although Shaw/Freedom settled for the headline, the above discussion finds that without opining on the accuracy of the study the Competition Bureau’s findings cannot and should not be used to justify the implementation of set-asides in the upcoming 600 MHz auction. At a minimum, they cannot serve as a substitute for a proper analysis such as the one performed by Dr. Eisenach who found the Canadian market to be competitive.
28. Finally, competition does not require regulatory intervention. The Canadian mobile wireless market is competitive and thus additional competition must enter under competitive conditions. As the long history of preferential treatment shows, regulatory-designed entry is not sustainable in the long run.

5. Canadian Churn Rates Are Not Indicative of a Lack of Competition

29. Shaw/Freedom claims that “exceptionally low” monthly churn rates for Rogers, Bell, and TELUS further demonstrate the alleged lack of competition.28 The respondent does not benchmark the 1.3–1.6 percent rates and thus has no reference point for its allegation that they are exceptionally low. In fact, they are not even particularly low. Table 2 shows the 2015 and 2016 annual churn rates for the four largest U.S. mobile wireless providers and compares them to Rogers, Bell, and TELUS. Per Shaw/Freedom’s own statement, the United States is a particularly good benchmark due to its “strong, facilities-based competition” and “falling prices, increased quality and diversity in services and high levels of investments.” 29 It is unclear how the respondent can deem Canada as noncompetitive because of “exceptionally low” churn rates when the United States, which Shaw/Freedom deems strongly competitive, has almost identical churn rates.

30. Rather than a measure of competition, churn rates are a measure of customer satisfaction. Churn rates are low when subscribers are pleased with the service they receive and high otherwise. As the CRTC states in its 2015 report on mobile churn rates: “Customers may leave their WSP for a number of reasons, including dissatisfaction with the service,

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28 Shaw/Freedom, n. 10.
29 Ibid., ¶ 20.
taking advantage of competitive offers, and pricing issues.”

Thus low churn rates are indicative of high service quality, competitive price offerings, and reasonable prices.

### Table 2. Annual Churn Rate Comparison

<table>
<thead>
<tr>
<th>Carrier</th>
<th>2015 Annual Churn Rate (Postpaid Only)</th>
<th>2016 Annual Churn Rate (Postpaid Only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>AT&amp;T Mobility</td>
<td>1.25 %</td>
<td>1.19 %</td>
</tr>
<tr>
<td>Verizon Wireless</td>
<td>0.96 %</td>
<td>1.01 %</td>
</tr>
<tr>
<td>Sprint</td>
<td>1.74 %</td>
<td>1.62 %</td>
</tr>
<tr>
<td>T-Mobile</td>
<td>1.39 %</td>
<td>1.30 %</td>
</tr>
<tr>
<td>Rogers</td>
<td>1.27 %</td>
<td>1.23 %</td>
</tr>
<tr>
<td>Bell</td>
<td>1.28 %</td>
<td>1.25 %</td>
</tr>
<tr>
<td>TELUS</td>
<td>0.94 %</td>
<td>0.95 %</td>
</tr>
</tbody>
</table>

**Notes and Sources:**


#### 6. Subscriber Penetration Rates Are Not Indicative of Competition

31. Shaw/Freedom also cites a report that states, “Canada has the lowest subscriber penetration rates of all the countries included in the survey.” The respondent then proceeds to claim that this alleged fact “reflect[s] the deficiency of competition in the market.” This statement is wrong for a number of reasons. First, and most important, Shaw/Freedom again assigns causation by claiming that the alleged low mobile penetration rate is due to a lack of competition. Yet, the respondent offers no support for this allegation. Shaw/Freedom’s allegations would imply that despite ISED long history of preferential treatment, despite the fact that Freedom has been in the market for nearly a decade, and despite the fact that Shaw/Freedom and other claim to have benefitted

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31 Ibid., n. 11.

32 Ibid., ¶ 17.
consumers, they have been unable to increase penetration. Clearly, these arguments do not add up. Second, mobile penetration rates are at most a rough measure of competition, or arguably none at all. For instance, with a 148 percent, Greece has one of the world’s highest penetration rates.33 Using Shaw/Freedom’s logic, this would imply that Greece is among the most competitive markets in the world. Yet, the Greek mobile market consists three (not four) mobile wireless providers with the largest provider, Cosmote, serving close to half (48.2 percent) of the market.34 Clearly, there is no correlation between mobile penetration rates and competitiveness. In fact, according to the World Economic Forum Global Competitiveness Index 2016–2017, Greece ranked number 86 out of 138 countries. Canada ranked number 15.

32. I also add that there is no reason to believe that Canada’s mobile penetration rate of 86 percent is too low and that it will increase with set-asides in the 600 MHz auction. A mobile penetration rate is the ratio of the total number of mobile subscribers and total population. Total population includes far more individuals (e.g., newborns) than those who actually subscribe to mobile wireless services. Thus, a penetration rate of 86 percent likely covers all citizens who desire mobile wireless service. It is more common that high mobile penetration rates, particularly those in excess of 100 percent, are indicative of a market problem. For instance, when termination rates are too high, consumers opt to purchase two or more SIM cards or two handsets in order to minimize the number of off-net calls.

34 Ibid.
7. **Dr. Emch’ Study Adds No Value to the Question of Competition**

33. Shaw/Freedom also cites a study by Dr. Eric Emch.\(^ {35} \) Submitted in another proceeding, this study adds no value to the present proceeding. Dr. Emch does not offer any new evidence with respect to competition but simply summarizes the Competition Bureau’s findings discussed above and reproduces a figure from a report produced by NGL Nordicity Group Ltd.\(^ {36} \) Dr. Emch takes the two studies at face value, does not review them, and adds no value to them. As discussed above, the Competition Bureau’s finding in the Bell-MTS merger cannot be used as a carte blanche for procompetitive measures, especially set-asides. As for the Nordicity Report, Dr. Emch appears to blindly rely on a report that “suffers from fundamental methodological flaws and is systematically biased.”\(^ {37} \) As Dr. Eisenach points out, “The Nordicity Report openly acknowledges methodological limitations which, even taken at face value, invalidate its conclusions regarding comparative prices.”\(^ {38} \)

8. **Shaw/Freedom Does Not Require Set-Asides to Compete**

34. Undoubtedly, the proposed set-asides are beneficial for Shaw/Freedom as they provide the company an advantageous position in the auction to obtain a critical asset below market value. This, in turn, provides for higher profits or a lower interest rate due to a lower risk profile. The rationale for this is simple: Shaw/Freedom will set its retail prices based on market prices. Market prices, in turn, are a function of spectrum costs, including

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\(^ {37} \) Eisenach Report, p. 5.

\(^ {38} \) Ibid.
the open spectrum, which typically sells at prices much higher than equivalent set-aside spectrum. Since set-asides provide Shaw/Freedom with lower costs, the company will not pass the lower costs to consumers but pocket it in form of higher profits. This, however, should be irrelevant to ISED as Shaw/Freedom can obtain the required spectrum in the open market at market prices. In a competitive market, Shaw/Freedom, or any other party for that matter, does not require government assistance in the form of set-asides. Set-asides in Canada’s competitive environment mean that ISED provides an advantage to some competitors over others. Not only does this skew the competitive outcome and harm infrastructure deployment, but there is also no guarantee that any of Shaw/Freedom’s cost savings would be used to benefit Canadian consumers.

35. Equally self-serving is Shaw/Freedom’s statement, “the obvious question is why new competitors in Canada continue to struggle in their efforts to counter the dominance of the incumbents.”\textsuperscript{39}\ The respondent cites “significant barriers to competition.”\textsuperscript{40}\ These statements directly contradict the information that Shaw/Freedom shared with its investors. As explained in my initial expert report:

More important, the company does not view the current competitive landscape as an impediment to build out its network, noting “Shaw is well positioned to become a fourth major player in the markets it services as it’s bound to attract individual customers, as well as small and mid-size business looking for less expensive, high-speed plans….” Shaw/Freedom also states that it plans to acquire additional spectrum in the upcoming auction with no mention that financial backing would be an impediment.\textsuperscript{41}

\textsuperscript{39}\ Shaw/Freedom, ¶ 21.
\textsuperscript{40}\ Ibid.
\textsuperscript{41}\ Dippon, ¶ 19.
36. It is unclear how Shaw/Freedom can state to its investors that the company is well positioned when at the same time it claims that it faces significant barriers and struggles in its efforts to counter the dominance of the incumbents.\(^{42}\)

**B. Shaw/Freedom Does Not Require Discounted Spectrum**

1. **Spectrum Holdings in Canada Do Not Yield Market Power**

37. In light of Dr. Eisenach’s study that finds the Canadian market for mobile wireless services competitive and absent any credible evidence from Shaw/Freedom to the opposite, there is no need for set-asides. Under competitive conditions, a single nationwide provider cannot foreclose any other company from obtaining spectrum because bidding is anonymous. A closer look at the Competition Bureau’s findings also does not support the theory that there is collective market power through implicit collusion. This theory is also not supported when observing a marketplace where three nationwide providers clearly compete with each other. Thus, there is no threat that collectively the nationwide providers can exclude the regional providers from bidding. In fact, it is unclear how this could even be implemented because bidding is anonymous.

38. Shaw/Freedom is correct that spectrum is a necessary input to facilities-based competition. The respondent is also correct in finding that entrants possess less spectrum than companies that have been in the market since the invention of the cellular phone. This, however, does not mean that “spectrum ownership is highly concentrated in the hands of Canada’s three wireless incumbents,” and that “concentration leads to market

power.” 43 As explained, the three, not one, nationwide wireless providers are three distinct economic entities and adding their individual spectrum holdings is meaningless. Thus, the fundamental premise that spectrum is concentrated is incorrect. It therefore follows that there is also no concern of market power.

2. Shaw/Freedom Misstate Dr. Baker’s Testimony

39. Shaw/Freedom cites the work of Dr. Jonathan Baker as support in its claim that spectrum concentration leads to market power. 44 Although the claim is moot given the lack of concentration in Canada, Shaw/Freedom misstates Dr. Baker’s testimony before the U.S. Federal Communications Commission. First, Dr. Baker does not address set-asides but looks at spectrum caps. Thus, arguably the testimony is irrelevant. Second, Dr. Baker’s report states:

When spectrum ownership is concentrated, firms may be able to exercise market power downstream in the provision of services that use wireless spectrum as an input. Large incumbent firms that recognize this prospect may have an incentive and ability to obtain or maintain downstream market power by keeping spectrum away from rivals. 45

40. Shaw/Freedom translates this carefully worded and conditional statement into a simple headline: “spectrum concentration leads to market power.” 46 This is clearly not what Dr. Baker is saying. To examine whether spectrum concentration actually leads to market power in Canada, as alleged by Shaw/Freedom, Dr. Baker’s finding would require several important steps—none of which Shaw/Freedom has chosen to take. First, the respondent would need to show that spectrum ownership is concentrated. As explained,

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43 Shaw/Freedom, ¶ 23.
44 Ibid., n. 21.
46 Shaw/Freedom, ¶ 23.
simply summing the spectrum holdings of all nationwide providers is incorrect, particularly because regional providers have revealed no interest in serving a nationwide subscriber base. Second, Shaw/Freedom would need to explain what constitutes concentration. Dr. Baker does not discuss this important point. Concentration metrics need to be carefully examined and evaluated before any meaningful assumptions can be drawn. Many developed countries have three or four nationwide providers and thus exhibit similar levels of concentration as Canada. Moreover, there are no valid economic findings stating that these levels are non-competitive. Third, Shaw/Freedom would need to prove that an individual nationwide mobile wireless provider or that all nationwide mobile wireless providers actually exercised market power. As Dr. Baker implies, market power is not harmful to competition; it is the exercise of market power that is harmful. Finally, Shaw/Freedom needs to show that there is a realistic plan for a nationwide mobile wireless provider or for all nationwide mobile wireless providers collectively to foreclose the market. This requires a theoretical model that demonstrates how an individual nationwide mobile wireless provider might purchase all of the 600 MHz spectrum or how a combination of the nationwide mobile wireless providers might communicate or signal throughout the auction to ensure that they act collectively and not mistakenly compete against each other. The latter (which is what Shaw/Freedom seems to allege) is nearly impossible because it requires coordinated behavior among the three nationwide mobile wireless providers. As correctly stated by the Competition Bureau:

Coordinated effects involves interaction by a group of firms (including the merged firm), that is profitable for each firm, because of the firms’ accommodating reactions to the conduct of the others. In essence, firms who repeatedly compete in the same market can develop an unspoken understanding that each firm will respond cooperatively to the behaviour of the other firms. While the coordinating firms may not explicitly
communicate with each other, this behavior facilitates higher market prices. For instance, a firm may raise its price if it expects others to follow, even if it would not have been profitable to do so independently.47

41. Coordination requires communications, either explicitly or implicitly, among the nationwide providers. In this respect, when evaluating the Bell-MTS merger, the Competition Bureau opined:

The Bureau’s investigation revealed that pricing is transparent and closely monitored by competitors, and that the threat of retaliation from competitors is a significant factor in pricing decisions. Notably, Bell, TELUS and Rogers can signal their future pricing intentions by using promotional pricing with pre-specified end dates, as well as by publicly announcing their future pricing strategies in investor calls.48

42. Just like the Competition Bureau, Shaw/Freedom must show that bidding in the 600 MHz auction “is transparent and closely monitored by competitors.”49 This, of course, cannot be shown because bidding is anonymous. Hence, coordination is not possible, and, in fact, to preserve the integrity of the bidding process, ISED’s proposed auction rules prohibit collusion and other communications among bidders. Without the ability to communicate during the auction, the three nationwide mobile wireless providers cannot coordinate and thus cannot foreclose the spectrum. Shaw/Freedom’s claim fails to go through any of these analytical steps but instead makes the false conclusion that there is concentration and then the giant leap that concentration leads to market power.

3. Market Forces Will Determine Who Values the Spectrum the Most

43. Although Shaw/Freedom acknowledges that ISED has provided preferential treatment to the regional providers on numerous occasions, it opines, “[T]he incumbents continue to

48 Ibid.
49 Ibid.
The respondent stresses, “[N]ewly available low-frequency spectrum is much more important to new competitors,” as it allows them to build for more coverage, presents a low marginal utility for nationwide providers, is essential to compete in terms of costs, and allows for the building of an efficient network.

Again, the statement is not supported by basic economic principles. Most fundamental, if the spectrum is more important to the new competitors, they will win the spectrum because they will place the highest value on the spectrum. There is no need for set-asides to achieve this outcome. Second, and similarly, if Shaw/Freedom is correct that the spectrum is of low marginal utility to the nationwide providers, then they will not be serious contenders for the spectrum when it comes to bidding. Third, with nearly a decade in the market, Shaw/Freedom is not a new competitor. Furthermore, a seemingly well-funded and experienced incumbent cable operator also owns the respondent.

Shaw/Freedom devotes most of its comments on demonstrating that the nationwide providers have greater spectrum holdings. I believe there is no argument on this subject. However, this is because the nationwide mobile wireless providers entered the market first—not because of any preferential treatment afforded to either the nationwide or the regional providers. Consider the following example: Google’s initial public offering (IPO) was on August 19, 2004, when its stock sold at around $85 per share.

50 Shaw/Freedom, ¶ 25.
51 Ibid., ¶ 35.
52 Ibid.
same stock is worth around $1,019. Those who were present and willing to invest in Google in 2004 obtained the stock at $85. That was the fair market value of Google as its success had not been forecasted and had not materialized at the time of the IPO. Relative to today, it was a risky investment. Those who want to invest in Google today must pay around $1,019.

46. Shaw/Freedom was not present and willing to invest in mobile wireless infrastructure in the mid-1980s when Rogers, Bell, and TELUS first started providing mobile wireless services in Canada. At the time, the subscriber bases were relatively low, equipment costs were high, risk levels were high, and consequently retail prices were high. Shaw/Freedom was also not willing to acquire sufficient spectrum in past auctions. Thus, the noted spectrum imbalance is largely one of Freedom/Shaw’s own choice. Unlike others, nationwide providers took a risk on spectrum and developed a solid market. Accordingly, the same providers possess valuable network infrastructure, including spectrum. There is nothing unfair or uncompetitive about this. Yet, in essence, Shaw/Freedom is asking ISED to allow it to obtain spectrum at below market value despite entering the market late. This is akin to asking Google to sell me stock at $85 per share because I missed the IPO—a clearly absurd demand. Although there is no dispute over the fact that Shaw/Freedom has less spectrum, the company must acquire its spectrum at today’s market prices and not be given a discount because it elected not to take the risk on wireless deployment at the same time as the nationwide providers did.

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4. Shaw/Freedom Has Equitable Access without Set-Asides

47. Shaw/Freedom further claims, “no matter how much money we invest, or how innovative we are technologically or operationally, the only way we can overcome these challenges is through equitable access to low-frequency spectrum.” 55 First, given the competitive market in Canada, Shaw/Freedom has the same access to the 600 MHz spectrum as all other bidders, large or small. What Shaw/Freedom wants is unequitable access where it can pay less for spectrum than some other bidders must pay. Second, Shaw/Freedom has historically placed its focus on urban areas. Thus, the alleged lack of low-frequency spectrum did not have a material impact on the respondent’s ability to innovate and overcome its alleged challenges. Third, Shaw/Freedom have not explained, let alone announced, any plans to serve rural communities for which the high propagation spectrum is best suited.

48. Relatedly, Shaw/Freedom claims, “This Consultation provides a unique opportunity that will not be repeated to adopt a measure that begins the slow and challenging process of overcoming the mobile incumbent’s market power.” 56 First, as explained and disproven, there is no market power. Second, Shaw/Freedom already has equitable access. Third, Shaw/Freedom also has low-frequency spectrum as it recently acquired from Videotron 2x5 MHz blocks of 700 MHz band spectrum in British Columbia, Alberta, and Southern Ontario along with 2500 MHz band licenses (2x10MHz) in Vancouver, Calgary, Edmonton, and Toronto. 57 Curiously, despite Shaw/Freedom’s claimed urgent need for

55 Shaw/Freedom, ¶ 36.
56 Ibid., ¶ 37.
57 See “Shaw acquires 700MHz, 2500MHz spectrum from Videotron for CAD430m; sells ViaWest for CAD2.3bn,” TeleGeography, June 14, 2017, https://www.telegeography.com/products/commsupdate/articles/2017/06/14/shaw-acquires-700mhz-2500mhz-spectrum-from-videotron-for-cad430m-sells-viawest-for-cad2-3bn/.
low-frequency spectrum, the company has yet to announce how and when it is going to deploy its 700 MHz spectrum.

C. Shaw/Freedom’s Responses Are Based on Incorrect Arguments

1. Q1A: Shaw/Freedom Cannot Substantiate a Need for Set-Asides

49. Not surprisingly, Shaw/Freedom supports the use of set-asides in the 600 MHz auction. The respondent cites the “enduring dominance of the incumbents,” the “persistent barriers to competition faced by new wireless competitors,” and the correlation between spectrum concentration and market power.\(^{58}\) Shaw/Freedom appended a study by Dr. Cramton that reportedly substantiates “the incumbents’ strong incentives to foreclose new competitors.”\(^{59}\) As explained above, Shaw/Freedom offers no sound evidence for any of these claims. The relevant market is competitive, all competitors face the same barriers, and the correlation between spectrum concentration and market power is vastly overstated. With respect to the incentive for foreclosure, my review of Dr. Cramton’s study finds the work deeply flawed and inconsistent with the author’s prior work.

50. Interestingly, Shaw/Freedom lists the AWS-1 auction as one of the “other empirical examples of the foreclosure risk.”\(^{60}\) Shaw/Freedom claims that the nationwide providers colluded and foreclosed all entrants from the open licenses. This claim is simply absurd. First, although I agree that the entrants in the AWS-1 auction were actively bidding on open licenses, they did so not to win but primarily to drive up the costs of the nationwide providers. This point can be demonstrated empirically by examining the bidding history.

\(^{58}\) Shaw/Freedom, ¶ 39.

\(^{59}\) Ibid., ¶ 44.

\(^{60}\) Ibid., ¶ 46.
As explained in my 2008 study on the AWS auction,\(^6^1\) and as I reiterated it in my initial expert report:

Consider, for example, the bidding history of service area 304 (Cape Breton). License 304d is a 10 MHz set-aside license. License 304e is a 10 MHz unrestricted license. As shown in Appendix D, between rounds 31 and 117, entrant Bragg continually bid up the price of the unrestricted 10 MHz block, despite the fact that the identical set-aside block was available for as little as one-seventh the price of the unrestricted block. In round 122, Bragg then bid on the restricted spectrum and was outbid by another entrant, Globalive, in round 127. At that point, the restricted spectrum license traded at CAD 200,000, while the unrestricted license was at CAD 1,290,000 – 6.5 times higher than the identical restricted license.\(^6^2\)

51. It is unclear how Shaw/Freedom can claim that entrants were actively bidding for open licenses when set-aside licenses were selling at a fraction of the price. Second, Shaw/Freedom accuses the nationwide providers of colluding in the auction. Not surprisingly, the respondent offers no evidence because collusion would have been practically impossible and in violation of the auction rules. Finally, and ironically, if Shaw/Freedom’s allegations were true, this would be proof that set-asides are the wrong procompetitive measure, as per Shaw/Freedom they did not work.

52. Shaw/Freedom also claims that preferential treatment for it and other eligible providers would benefit Canadians and “enable further service-based innovation and competition by facilitating a more robust wholesale wireless market in Canada.”\(^6^3\) As explained, additional mobile wireless providers certainly can (although not necessarily do) increase competition. However, this competition can occur without preferential treatment. Shaw/Freedom provides no evidence that the claimed benefits to consumers are

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\(^{62}\) Dippon, ¶ 64.

\(^{63}\) Shaw/Freedom, ¶ 51.
contingent on set-asides or other procompetitive measures. Quite simply, the spectrum is available for Shaw/Freedom to acquire, and there is no need to provide the respondent with preferential treatment.

2. **Q1B: A 40 MHz Set-Aside Is a Step in the Wrong Direction**

53. Shaw/Freedom argues for 40 MHz of set-aside spectrum in lieu of the proposed 30 MHz. Given the lack of economic support for any set-asides, the correct amount of set-aside is zero. Notwithstanding, 40 MHz would have serious repercussions for Canadian consumers as it would worsen the double-tax effect from set-asides. It would increase spectrum costs for the nationwide providers because they would battle for even less open spectrum while at the same time allowing eligible bidders to engage in fake bidding, thereby further increasing the costs of open licenses. This, in turn, would exert upward retail price pressure.

3. **Q1C: Shaw/Freedom Does Not Address the Biggest Flaw of Eligibility**

54. Shaw/Freedom proposes a number of changes to the eligibility requirements. What the respondent does not address is why a provider’s nationwide market share should be a variable in assessing eligibility. As explained in my initial expert report, eligibility should be strictly assessed based on financial needs.64

D. **The Cramton Paper Offers No Value**

55. Shaw/Freedom append[s] a study by Dr. Cramton, who was retained to “comment on the use of set-asides in the upcoming 600 MHz spectrum auction.”65 Dr. Cramton commences with his perception of the economic rationale of set-asides, then he attempts to assess the

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64 Dippon, ¶ 111.
Canadian marketplace for the suitability of set-asides, and finally he concludes by providing instances of set-asides from other countries. Dr. Cramton concludes that set-asides are necessary as a “package auction without a set-aside would let the dominant incumbents foreclose competition.…”66 The author adds that he “would be shocked if such an outcome did not occur.”67

56. My review of Dr. Cramton’s study finds numerous questionable assertions, but its fundamental flaw is a mischaracterization of the competitive landscape in Canada. Dr. Cramton provides no serious evidence that the Canadian marketplace is not competitive, and the evidence he does provide is misleading. Because the lack of competition is a necessary condition for the imposition of set-asides and since Dr. Cramton admits (in other articles) that a competition investigation must precede set-asides, in the absence of such an investigation, his opinion on set-asides should carry no weight.

1. **Dr. Cramton’s Rationale for Set-Asides Is Insufficient**

57. Promising to explain the rationale for set-aside, Dr. Cramton presents a rather confusing and high-level array of statements, none of which is very practical in evaluating ISED’s proposal for set-asides. Dr. Cramton claims that the primary motivation of set-asides is to “prevent excessive concentration of spectrum.”68 The author, however, does not provide any insight as to what constitutes excessive concentration and whether this measure applies to an individual mobile wireless provider or the sum of all nationwide mobile wireless providers, as argued by his client.

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66 Ibid., p. 8.
67 Ibid.
68 Ibid., p. 2.
58. Dr. Cramton then proceeds to explain the rationale of set-asides with an example of a symmetric duopoly. His point is simple: In a duopoly situation, an entrant might not bid as it anticipates that the two incumbents will bid fiercely to protect the duopoly profits. If, however, the auction features a set-aside, the entrant stands a chance of winning and thus enters. Interestingly, the only situation for which Dr. Cramton can explain the alleged benefits of set-asides is for a duopoly market (where there are only two providers). This illustrates that set-asides influence the decision to participate only in extreme examples, which bear no resemblance to the wireless telecommunications market in Canada. In fact, Dr. Cramton admits that set-asides are not suited for situations other than extreme cases, stating:

Set-asides may be undesirable in settings with robust competition and little spectrum concentration; however, set-asides are desirable in settings with concentrated markets and concentrated spectrum holdings. The circumstances in which the Canadian 600 MHz spectrum auction will be held is certainly one where both market share and low-band spectrum holdings are highly concentrated.69

59. There are a number of flaws in Dr. Cramton’s argumentation. First, he describes set-asides as undesirable in situations with robust competition and little spectrum concentration and desirable in concentrated markets with concentrated spectrum holdings. It remains unclear how he defines robust competition, little spectrum concentration, concentrated markets, and concentrated spectrum holdings. Further, it is illogical that set-asides are not useful in markets with robust competition but useful in markets with some concentration of spectrum, especially when that level of concentration reflects efficient allocation. The logical sequence would be to refrain from using set-

69 Ibid., p. 3.
asides in markets with robust competition and to use set-asides in noncompetitive markets.

2. Dr. Cramton Performs No Analysis and Relies Only on Assumptions

Dr. Cramton skips the most important analysis. He fails to evaluate whether the characteristics of the Canadian mobile wireless market fall on the “robust competition” side, the “concentrated markets” side, or somewhere in between. Rather, Dr. Cramton simply proclaims, “The circumstances in which the Canadian 600 MHz spectrum auction will be held is certainly one where both market share and low-band spectrum holdings are highly concentrated.”

Thus, Dr. Cramton assumes that the Canadian market can support an additional mobile wireless provider, even in regions where there are already four choices. Dr. Cramton also assumes that the nationwide mobile wireless providers will act in concert despite ample evidence of competition among the three nationwide providers. He also assumes that this alleged combined entity of nationwide providers is going to foreclose the market despite having not reviewed their respective spectrum holdings. Dr. Cramton also assumes that the regional providers know this in advance and assumes that they therefore will not participate in the auction. Dr. Cramton makes all these assumptions without any evidence or analysis. In essence, Dr. Cramton assumes there is no competition and then finds that set-asides are necessary.

The suitability of set-asides is much more complex than a simple review of concentration. It calls for a careful cost-benefit analysis, much as the one I performed in my initial expert report. In fact, Dr. Cramton’s prior work makes this very point, stating:

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70 Ibid. (emphasis added).
Set-asides and spectrum caps have been used to ensure that new entrants have a chance to provide service and additional competition in the market for wireless service. However, there is a potential sacrifice from set-asides and spectrum caps—the incumbent wireless providers may be the most efficient providers of service. If the sacrifice of efficiency is not outweighed by the additional competition engendered by a new, less efficient competitor, then there is a real cost to using set-asides and spectrum caps. For example, an incumbent provider may be able either to integrate additional spectrum into an existing network to provide additional capacity at low cost or to combine with existing spectrum to provide a new service that requires more capacity than would be possible without the additional spectrum. If the new entrant would not increase competition by innovating or lowering prices but would incur build-out costs and additional operating costs, promoting new entry would not be socially efficient.

Set-asides and spectrum caps should be used when there is a real chance that the additional competition will increase consumer choice and lead to efficient competition. This needs to be determined before using these tools.71

62. I agree with Dr. Cramton’s description from his previous work. In fact, as summarized in Figure 3 of my initial expert report and reproduced below, set-asides must be evaluated by carefully balancing the pros and cons of this procompetitive measure.

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63. It is unclear why Dr. Cramton did not follow his own advice and perform a cost-benefit analysis; however, he chose simply to *declare* the Canadian mobile wireless market suitable for set-asides. As Cramton et al. correctly state, “[T]he extent of ex post competition can be influenced by the regulator with these instruments, but the underlying economies of scale may well undo the regulator’s desire for more competitors.”\(^{72}\)

3. **Dr. Cramton Mischaracterizes the Competitive Landscape**

64. In lieu of a proper competition analysis that economists routinely perform, Dr. Cramton opted to present a set of anecdotal and meaningless statistics. He declares the market concentrated as three providers have 90 percent of the subscribers and 92 percent of the

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\(^{72}\) Ibid., S180.
As described above, this hardly qualifies as evidence of a noncompetitive market. Yet, this is the extent of Dr. Cramton’s promised assessment of the “suitability of set-asides in Canada’s 600 MHz auction.”

Dr. Cramton deviates to the U.S. 600 MHz auction, constructing a rather bizarre argument. He notes that Verizon did not participate in the U.S. auction and that AT&T acquired very little spectrum. On one hand, he concludes from this that Verizon and AT&T had sufficient low-frequency spectrum—a fact that Verizon publicly announced. Yet, on the other hand, he finds that if it were not for set-asides, AT&T and Verizon would have purchased all 600 MHz spectrum simply to keep others from obtaining it. Naturally, Dr. Cramton offers no evidence of this alleged avoided foreclosure.

To make matters worse, Dr. Cramton simply transposes the U.S. experience onto Canada, claiming:

The economic setting of the Canadian 600 MHz auction is similar, with the exception that the competition problem is more severe in Canada, since the dominant incumbents command an even more dominant position in Canada both in terms of market share and low-band spectrum holdings.

Again, Dr. Cramton offers no evidence and continues to treat a competition assessment as a problem of two variables—collective market shares and collective spectrum holdings. I have explained why this is far from adequate if even relevant. Dr. Cramton also performs no analysis as to why the U.S. experience should be informative to the upcoming

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73 Cramton Paper, p. 4.
74 Ibid., p. 1.
76 Cramton Paper, p. 5.
Canadian auction. He seems to predict that Rogers, Bell, and TELUS will not participate in the auction if there is set-aside spectrum. There is no evidence of this.

68. Dr. Cramton takes another leap in logic by declaring, “Absent a significant set-aside, foreclosure of competition would be likely—causing tremendous long-term harm to consumers.”77 It is unclear how Dr. Cramton can assert this without considering all of the facts or conducting an analysis.

69. Dr. Cramton states, “Well-crafted set-asides can enhance competition … while generating little risk that … would adversely impact the auction outcome.”78 However, Dr. Cramton offers no Canada-specific evidence but points to a random array of U.S. auctions—all of which were conducted in entirely different market settings. For instance, it is unclear how the U.S. PCS auction from 1996 is helpful to ISED in reaching a sound decision regarding set-asides in the 2017 upcoming 600 MHz auction. More than two decades later, the mobile wireless market is vastly different.

4. The Increase in the Amount of Set-Asides Is Unsupported

70. Although Dr. Cramton appears not to have examined the competitive landscape in Canada, assessed the need for set-asides, or balanced any benefits from set-asides against any costs, he turns to the amount of set-asides. Here, he proclaims that the amount should be 40 MHz not the proposed 30 MHz. Such a suggestion cannot be taken seriously in the absence of any analysis.

71. Dr. Cramton is of the opinion that setting aside 40 MHz would maximize participation.79 Offering no support, he states that reducing the open spectrum to 30 MHz would prevent

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77 Ibid.
78 Ibid.
79 Ibid.
the “dominant incumbents” not to divide the proposed 40 MHz of spectrum between two providers. He also demonstrates his misunderstanding of the Canadian mobile wireless market by assuming that the nationwide providers are “dominant” and that TELUS and Bell are one combined bidding entity because they have a sharing agreement. He is wrong.

5. Dr. Cramton’s History of Set-Asides Is Meaningless

In the remainder of his paper, Dr. Cramton lists an array of auctions that contained some form of set-asides. It is unclear why this is helpful. For instance, Dr. Cramton uses the example of the U.S. PCS auction in 1996 as an example of a successful set-aside in that there was a major competitive expansion after that auction. Of course, it is true that there was a major expansion, but there is no evidence that this expansion required set-asides. Additionally, the starting position was different; the set-aside entities in that auction were quite different from the current Canadian situation, and the goals were different. The use of set-asides in other auctions is not relevant in this instance. One would have to compare all the surrounding issues prevalent at the time to make a meaningful comparison, and comparing an auction held in 1996 in one country to an auction to be held in 2017 in Canada is not a reliable comparison. Even if particular set-asides had worked in the United States in some auctions, there is no reason to expect that they would work in Canada under very different conditions. In the absence of any credible evidence or empirical work, I recommend that ISED ignore Dr. Cramton’s findings.

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80 Ibid.
VI. **REPLY TO THE QUEBECOR MEDIA COMMENTS**

73. Quebecor Media structured its comments around ISED’s questions. Therefore, I will limit my review to Quebecor Media’s responses to Questions 1A, 1B, and 1D. I have no comments on Quebecor Media’s response to 1C and stand by my initial recommendation. I base my review on a translated version of Quebecor Media’s comments, which the respondent submitted in French.

A. **Quebecor Media Offers No Meaningful Evidence in Support of Set-Asides**

74. Quebecor Media supports ISED’s set-aside proposal. The respondent finds that regional service providers control the alleged market power of the incumbents, face a spectrum deficit in low-frequency bands, and require set-asides to avoid being foreclosed by the incumbents. As such, Quebecor Media’s support for set-asides mirrors that of Shaw/Freedom’s comments. Hence, where appropriate, I briefly summarize my points and refer ISED to my responses to Shaw/Freedom’s comments for a more detailed discussion.

1. **Regional Providers Do Not Require Preferential Treatment**

75. Quebecor Media claims undeniable benefits to Canadian consumers from the entry of regional providers. The respondent uses the same quote as Shaw/Freedom to support its point. As I explained in Section V.A.4, the finding by the Competition Bureau is not a carte blanche for any type of regulation. Without addressing the Competition Bureau’s analysis, the finding is specific to the Bell-MTS merger and the geographic market affected by that merger, and is not applicable to the entire nation. In fact, as explained, if anything, it only applies in some markets. It is also not obvious why there is no fourth
provider in these markets or if set-asides are enough to entice regional providers like Videotron to deploy service in these markets.

76. Quebecor Media uses the example of the rejected acquisition of Hutchison by Telefonica UK as an example of why four providers are necessary to provide sound competition. However, there is no magic in the number four, and many countries have three or even two mobile wireless providers and still have competitive markets. For instance, in 2012, the Austrian regulator permitted the merger of Hutchison 3G Austria and Orange, thereby reducing the number of mobile wireless providers from four to three. The GSMA recently conducted a study evaluating the competitive consequences of this merger. It finds:

> We find that the merger had a significant positive impact for Austrian consumers. Hutchison was able to accelerate population coverage of its 4G network by 20–30 percentage points as a result of the merger, with this taking effect after two years. Hutchison’s 4G network quality also increased significantly, with 4G download and upload speeds increasing by 7 Mbps and 3Mbps respectively two years after the merger.\(^{81}\)

77. Thus, a market of three providers can be beneficial to consumers. In fact, as Dr. Eisenach’s study shows, the Canadian market that has three nationwide providers and a number of regional providers is competitive.\(^{82}\) It therefore does not require extending any preferential treatment to Quebecor Media or any other party.

78. Quebecor Media also cites statistics from Nordicity, which allegedly show that prices in Montreal are lower than in Canada overall. The logical explanation is that any carrier serving predominantly urban areas will offer lower prices than the Canadian average, due to high density and therefore lower costs. As explained by Dr. Eisenach, the Nordicity

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\(^{82}\) See Eisenach Report.
study is limited in its interpretation—a fact that Nordicity itself clearly states in its report. Thus, a comparison such as the one presented by Quebecor Media is meaningless. I also note that even if there were a difference in price (which remains unclear), Quebecor Media assumes, but does not show, that this lower price is due to its market presence. I find such a conclusion unlikely given the limited geographic reach of Videotron.

79. As stated previously, the intent of procompetitive measures is to benefit Canadian consumers. Although the increasing the number of mobile wireless providers may seem to increase competition, if those additional wireless providers require constant preferential treatment and impose costs on the subscribers of the nationwide providers, then they do not benefit Canadian consumers and are against the public interest. Regional providers do not require preferential treatment because the market is competitive. If a regional provider wants to offer service in a new region, then it faces an equal playing field as all other bidders in acquiring the required 600 MHz spectrum.

2. Spectrum Imbalances Do Not Require Set-Asides

80. It is an undisputed fact that low-frequency spectrum has higher propagation and penetrates buildings better than high-frequency bands. Also agreed is that a mobile wireless provider seeks wide coverage benefits from low-frequency spectrum. However, this does not mean that those with less low-frequency spectrum deserve a reward in the form of set-asides. The objective of the spectrum auction is to award the spectrum to the party that values it the most and therefore has the highest willingness to pay. The rationale for this is that the party that values it the most will use it the most efficiently, thus providing the most consumer benefits. Thus, if Rogers values a license more than Videotron, then ignoring the amount of spectrum that Rogers has, it is in the public interest...
interest that Rogers obtains the spectrum license. Of course, the opposite is equally true. The only time that this type of allocation is problematic is when the market is not competitive. In such instances, providers with market power are willing to pay more for the spectrum simply to block others, thereby undermining competition. Thus, the need for set-asides in Canada is not a question of who has what, but a question of whether the market is competitive. Dr. Eisenach conducted a detailed study of the Canadian market for mobile wireless services and found the market competitive.83 There is no other study and no additional evidence that the market is not competitive. This is the reason why the respondents can only cite to the Competition Bureau’s statement in the Bell-MTS merger and refer to some numbers in the Nordicity report. As I have explained, however, these two sources do not support set-asides. In the competitive Canadian market, Quebecor Media must pay the market price for spectrum, whatever that might be. Thus, although Quebecor Media spends page after page of its comments on demonstrating why it believes there is a spectrum imbalance, this is not relevant.

3. The Threat of Foreclosure Is Not Credible

81. Quebecor Media claims that the nationwide providers have dominated all auctions since 2008, winning a large share of the open spectrum. Quebecor Media incorrectly considers this evidence of foreclosure. Although the nationwide providers have not won all the open spectrum, the reasons these providers won the large majority is because the equivalent set-aside spectrum sold at a fraction of the price. Most certainly, Quebecor Media would not seek to acquire an open license in its serving area when an equivalent set-aside license costs the bidder a fraction of the price. Nationwide providers, however, 83 Ibid.
cannot bid on the set-aside spectrum and therefore must accept higher prices paid for the open spectrum. Thus, the result is not one of foreclosure but one of economics where bidders of set-aside buy low as they drive up the prices for open spectrum. These higher costs are passed off to consumers through higher prices; only the purchasers of the set-aside spectrum benefit as they earn higher profits. I provide an example of this in Section V.C.1, and I dedicated an entire appendix in my 2008 analysis of the AWS-1 auction to this issue.84

82. Quebecor Media also presents the testimony of Dr. Baker. As I discuss above in Section V.B.2, Dr. Baker addressed spectrum caps, not set-asides. More important, he made no finding of a foreclosure threat in Canada and simply stated the theory of foreclosure. Dr. Baker clearly conditions his statement on the absence of competition. Because the Canadian market is competitive, this threat does not apply. I also note that Dr. Baker was referring to one nationwide provider when Quebecor Media’s discussion refers to the “trois grands” as if the three nationwide providers were acting in concert. This is not something Dr. Baker discusses in his report and thus further undermines the applicability of his testimony to the present matter.

83. I recommend that ISED reject Quebecor Media’s endorsement of set-asides because the respondent has not provided any basis as to why set-asides are required in this auction. Quebecor Media, like all other bidders, should participate in an open auction to acquire spectrum at market prices.

84 See Dippon AWS Auction.
B. There Is No Justification for Increasing the Set-Asides to 40 MHz

84. Quebecor Media proposes an increase from 30 MHz to 40 MHz in the set-aside spectrum. The respondent offers little support for its proposal other than noting that such an outcome would be optimal because it would address the spectrum imbalance more aggressively. As explained above, however, any spectrum imbalance is not relevant. Set-asides are supposed to address competition concerns not to ensure that all providers have the same amount of spectrum. If equal spectrum distribution is the ultimate goal, then there is no need for an auction. ISED can allocate all providers the same amount of spectrum.

85. I recommend that ISED reject Quebecor Media’s proposal because economic theory does not support it, and it will not fulfill the intent of set-asides.

C. A 10-Year Resale Prohibition Does Not Serve Canadian Consumers

86. Quebecor Media proposes that ISED increase the resale prohibition from the proposed five years to 10 years. I strongly recommend against a 10-year resale prohibition as it could have serious repercussions on Canadian consumers. Spectrum is a scarce resource; therefore, efficient and timely deployment is in the best interest of Canadian consumers. A moratorium of 10 years would imply that an inefficient provider would have to wait a decade to sell the spectrum to a provider that can use it in the best interests of Canadian consumers.

VII. Reply to Cogeco Comments

87. Cogeco starts its comments with an introduction aimed at establishing why it supports ISED’s proposal for set-asides and why it deems a larger set-aside amount necessary.
Cogeco also presents its understanding of the policy objectives for the upcoming auction.

In the remainder of its comments, Cogeco responds to ISED’s questions. I have limited my review to Cogeco’s preamble (the introduction and the ISED policy objectives) and Cogeco’s responses to Questions 1A, 1B, 1C, and 1D.

A. Cogeco’s Self-Interest Guides Its Comments

88. Cogeco claims that there is “limited competition and, consequently, mobile consumers pay among the highest retail rates in the world.”\(^{85}\) This is not true, and the evidence presented by Cogeco reveals that the respondent has no support for its claim. First, Cogeco cites a research company that allegedly found that the equivalent of 30 Euros buys relatively few gigabytes of data in Canada relative to other countries.\(^{86}\) Even taking this report at face value, this does not support’s Cogeco’s bold claim. To ascertain the affordability of retail rates in Canada, a much more detailed analysis is needed than simply reporting how much data 30 Euros can buy. Dr. Eisenach conducted such study and found retail prices in Canada to be competitive. Second, the United States, which some respondents view as a competitive marketplace, does not fare any better in this the reported survey. Thus, it is questionable how relevant or reliable this information really is in ascertaining the need of set-asides.

89. Cogeco also cites the findings of a 2013/2014 study that reportedly found that “the incumbents possess market power.”\(^{87}\) That study was filed as part of the CRTC’s review of wholesale mobile wireless services, a proceeding that has been concluded. In its decision, the Commission did not find market power in the retail wireless marketplace.

\(^{85}\) Cogeco, ¶ 5.
\(^{86}\) Ibid., Figure 1.
\(^{87}\) Ibid., ¶ 6.
but did choose to impose tariff regulation of domestic wholesale roaming rates—a measure that the CRTC deemed sufficient to address a market power problem in the provision of wholesale roaming. Thus, the CRTC reviewed the study cited by Cogeco and took appropriate regulatory measures in that proceeding. Thus, it is not relevant in the present matter.

90. Cogeco lists “the limited availability of cellular mobile spectrum,” the lack of an MVNO wholesale market, and the lack of “reasonably-priced wholesale mobile roaming services” as hindrances to effective competition. It is unclear how this relates to set-aside spectrum. It is also economically incorrect. The CRTC already considered MVNO wholesale markets and concluded that it did not need to intervene. Moreover, MVNOs can strike wholesale access agreements on commercial terms. In terms of wholesale roaming, the CRTC already addressed this issue also, mandating cost-based (Phase II) domestic wholesale roaming access. Finally, it is correct that spectrum is finite. This is the reason why spectrum auctions should allocate it to those that value it the most and thus will deploy it in a manner most beneficial to consumers. None of this requires set-asides. The issues introduced by Cogeco are ones that the CRTC has addressed or that are not relevant to the issue of set-asides. As explained above, as long as the market is competitive, the imbalance of spectrum is not relevant.

91. Cogeco demands:

ISED must put in place a regulatory and policy framework leading to more than only two or three facilities-based mobile networks everywhere. Specifically, such a framework should focus on ensuring there are service

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88 Ibid., ¶ 9.
89 Ibid., ¶ 10.
providers able and ready to deploy these technologies in smaller urban centres and in rural areas without undue delay.\footnote{Ibid., ¶ 15 (emphasis omitted).}

92. This statement is not only incorrect but also very troublesome. First, as shown above and acknowledged by the Other Respondents and the Competition Bureau, most regions in Canada have a choice of three to four (not two to three) facilities-based mobile wireless providers. In fact, as shown in Table 1, almost all provinces have four facilities-based providers. In the areas where there are three facilities-based providers, there is no evidence that the three providers prevented others from entering. As explained in my initial expert report, regional providers focus on niche markets and thus might elect not to enter a market. This result is not undesirable, and it should not be resolved with set-asides. Furthermore, I explained in my initial expert report that regulators or spectrum agencies are not there to select winners or losers. These agencies are tasked with ensuring the most competitive playing field possible. Cogeco, however, would prefer that ISED extend preferential treatment only to those that are “able and ready” to provide service.\footnote{Ibid.}

Quite simply, this is not the task of a regulator but that of the market. If a provider is not able or ready to provide value to consumers, the market will force the provider to exit.

93. Although Cogeco never explains why set-asides are required (although making it clear that it would benefit from them), it requests that the amount of set-aside spectrum be increased from 30 MHz to 40 MHz. Additionally, Cogeco requests a spectrum cap of 20 MHz “for set-aside-eligible bidders who have already benefited from spectrum set-asides in the AWS-1 or AWS-3 auctions.”\footnote{Ibid., ¶ 17.} Cogeco does not provide any support, nor could it, because there is no economic rationale for either of these options. As explained
previously, a 40 MHz spectrum set-aside would harm consumers who obtain service from a nationwide provider. The 20 MHz spectrum cap is not logical as the AWS-1 and AWS-3 auctions allocated spectrum in different spectrum bands.

94. Interestingly, Cogeco states that it “can only [enter the mobile services market] if the conditions for entry support a viable business case.”93 This is the danger of set-asides. Set-asides or procompetitive measures are only useful if market forces are not sufficiently robust. In no circumstance is it acceptable to use set-asides to turn a negative business case into a positive business case. This is the classic example of inefficient entry. Inefficient entry driven by regulatory preferential treatment requires constant subsidization because survivability of an inefficient player in the competitive marketplace is impossible.

B. Cogeco Cannot Justify a Need for Set-Asides

95. Cogeco states that it supports set-asides but ultimately does not provide any justification. Although I understand that set-asides are in Cogeco’s best business interests, implementing a set-aside provision requires serious economic considerations because it affects significantly more than just Cogeco’s bottom line.

C. Cogeco’s Responses Are Unsupported and Ignore the Public Interest

1. Q1A: Cogeco Offers No Support for Set-Asides

96. Implementing set-asides is not a question of profits for a single market player. Rather, it requires a careful balance between the pros and cons of such a measure. As discussed previously, a necessary condition to implementing a procompetitive measure is the lack

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93 Ibid., ¶ 18.
of working market forces. As shown by Dr. Eisenach, the relevant market is competitive.\(^{94}\) Cogeco is either ignoring the required competition assessment or misunderstood the question and turned it to one of self-interest. The respondent states that set-asides are “absolutely necessary ‘to address issues of market power.’”\(^{95}\) Cogeco never bothers to demonstrate what those issues of market power might be.

2. **Q1B: Cogeco Offers No Support for Increased Set-Asides**

97. Similarly, ignoring the public interest, Cogeco requests an increase in set-asides from 30 MHz to 40 MHz. Curiously, it is in this section of its comments that the respondent cites the Competition Bureau’s finding in the Bell-MTS merger. At this point, it should be most telling to ISED that this finding by the Competition Bureau although in a totally unrelated matter serves as the only justification for set-asides that the commenters can find. I urge ISED to carefully review this statement in light of the importance that the Other Respondents place on it. As I explained in Section V.A.4, the statement should not serve as the lone justification for set-asides. Although it warrants consideration, a close review will quickly inform the reader that it does not apply to the present setting.

98. Cogeco claims that prices in Canada are much higher than in the United States, calling it a “significant and troubling statistic.”\(^{96}\) Yet, in Cogeco’s Figure 1, which purports to show the number of GBs of data that a consumer can purchase for 30 Euros in various countries, Canada and the United States are only minimally different, removed by only four positions.

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\(^{94}\) See Eisenach Report.  
\(^{95}\) Cogeco, ¶ 45.  
\(^{96}\) Ibid., ¶ 52.
99. Cogeco’s simplistic comparison also neglects to consider the attribute differences between the United States and Canada. For instance, as explained in my initial expert report, “Canada had the second highest spectrum costs…” These costs must be recovered, thus they exert an upward pressure on retail prices. I also show that if Canada’s spectrum prices were reflective of average spectrum costs, Canada’s quality index would be higher than that of the United States. In fact, as shown in Figure 2 of my initial expert report, even without such an adjustment, Canada has a higher wireless score than the United States.

3. Q1C: Cogeco’s Eligibility Requirements Ignore the Public Interest

100. Cogeco agrees with ISED’s eligibility requirements despite the fact that they encompass long-established telecommunications providers, which includes Cogeco that was established in 1957. Providing old Canadian telecommunications providers with a government subsidy does not serve Canadian consumers. Cogeco has provided no evidence that suggests that it cannot effectively compete in the market and requires the assistance of set-asides.

101. It is also curious that Cogeco suggests a spectrum cap of 20 MHz for eligible providers that allegedly already benefited from the AWS-1 and AWS-3 auction. There cannot be any justification for this other than self-interest.

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97 Dippon, ¶ 89.
98 Ibid., Figure 2.
4. **Q1D: Cogeco Sets the Correct Incentives for Spectrum Resale**

102. Although I find a resale prohibition of five years excessive, Cogeco is correct in highlighting, “Spectrum acquisition, and especially the acquisition of set-aside spectrum, should never be an opportunity merely to acquire and quickly flip a licence for profit.”

**VIII. REPLY TO THE EASTLINK COMMENTS**

103. Eastlink commences its comments by highlighting the importance of low-band spectrum to sustain competition and its proposal to increase the set-aside amount from 30 MHz to 40 MHz. Eastlink also proposes “a few other minor changes” to the auction framework before responding to ISED’s public consultation questions. I have limited my review of Eastlink’s comments to its preamble and responses to Questions 1A, 1B, 1C, and 1D.

**A. All Spectrum Is Critical to All Mobile Operators**

104. Eastlink stresses to ISED that competition “must be facilities-based and sustainable.” Eastlink is correct. Facilities-based competition is superior to other forms of competition, particularly service-based competition. It is also of utmost importance that competition is sustainable. In fact, I highlighted this point in my initial expert report because it appears that the regional providers (previously referred to as entrants) require constant government intervention to become or to remain competitive. This is not sustainable competition but government support of inefficient entry. Ultimately, Canadian consumers will have to pay for the efficiency losses created by this form of competition.

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99 Cogeco, ¶ 61.
100 See Eastlink, ¶ 21.
101 Ibid., ¶ 4.
105. Eastlink posits that (a) incumbent regional providers “have reasonable opportunity to access the 600 MHz spectrum,” and (b) “newer regional service providers with limited resources … have reasonable access.” These purported policy objectives shape the entirety of Eastlink’s comments and thus require a closer look. Equal access to spectrum is important to all service providers. Although newer companies can use the spectrum to expand their serving areas, more established providers are able to do the same in addition to increasing their service quality with increased upload and download capacities. If the market is competitive, as is the case for the Canadian mobile wireless market, all providers automatically have a reasonable opportunity to access the 600 MHz spectrum. Thus, as I stated previously, set-asides or any other procompetitive measure is only helpful to consumers if market forces do not work properly. Eastlink’s proposition to consider “limited resources” is highly problematic. A financial subsidy to a provider not only requires the regulator to pick winners and losers but also creates inefficient entry, which violates the “sustainable competition” objective. Canadian consumers will have to pay for this inefficient entry through higher prices and lower service quality. From an economic perspective, financial resources should not be a consideration in allocating the 600 MHz spectrum in Canada. Notwithstanding, should ISED consider it desirable to have more providers, it can do so via bidder credits. Set-asides are a particularly bad tool to subsidize entry. Bidder credits would have to restricted to those with verifiable limited resources. Based on media reports, Eastlink’s financial resources are plentiful.

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102 Ibid.
103 See Dippon, ¶¶ 105–107.
106. Interestingly, Eastlink notes that Canada’s “per-use prices [are] steadily declining,” and the market is home to “the most advanced networks in the world.” Eastlink’s assessment aligns with the findings of Dr. Eisenach’s competition analysis. If so, additional measures are no longer necessary, particularly since these state-of-the-art networks are present in areas not served by regional providers. However, Eastlink attributes this development largely to “competition from regional service providers.” Yet, the respondent does not offer any evidence to support this claim. Quite simply, if the three nationwide providers truly had market power, then this result could not have occurred.

B. Eastlink Offers No Support for an Increase in Set-Asides

107. Eastlink states its support for set-asides but recommends increasing the amount of the set-aside from 30 MHz to 40 MHz. As explained above, such an increase is not in the interest of consumers. I understand that Eastlink would prefer set-asides and the more the better; however, the relevant policy question is not what the interested parties want (or else ISED could have simply used voting), but what is beneficial for consumers. In addition, as explained, the claimed spectrum imbalance does not justify set-asides. Eastlink, like any other bidder, can obtain the required spectrum at market prices. To the extent that Eastlink does not have the financial resources (which the respondent never demonstrated) and ISED finds it socially desirable that Eastlink provide mobile wireless services, ISED can issue bidder credits. This addresses Eastlink’s concern of being unable to outbid the nationwide providers and does not burden Canadian consumers to the extent that set-
asides do. If financial strength is the only consideration, then bidder credits are the appropriate procompetitive measure.

C. Eastlink’s Comments Ignore the Canadian Consumer

1. Q1A: There Is No Risk of Foreclosure

108. Eastlink alleges that set-asides are necessary or else the three nationwide providers would foreclose the other bidders from obtaining spectrum. This argument is not economically sound in light of the competitiveness of the Canadian mobile market, and the evidence does not support it. There is also no evidence of massive unused spectrum – a phenomenon that one would observe under market foreclosure.

109. I also note that there is no evidence that regional providers seriously bid on open spectrum. In many instances, set-aside spectrum was much cheaper and thus the proper economic choice. In fact, the large price differences between the set-aside and open licenses disprove the claim of foreclosure. Under foreclosure, one would expect the two types of licenses to sell at similar levels as entrants, supposedly unable to obtain open spectrum, would bid fiercely for set-aside spectrum. Conversely, the established providers would stop bidding as soon as prices for the open licenses exceeded the prices for set-asides because at that point the alleged foreclosure would have been successful. Of course, not all regional providers were able to obtain set-aside spectrum because they had to compete with other eligible bidders. This, however, does not imply foreclosure on the open spectrum but the realities of the bidding process. Importantly, the objective is not to ensure that all regional providers can acquire additional spectrum at a discounted rate. Rather, the question is whether set-asides are in the public interest. As explained in my initial expert report, they are not.
2. **Q1B: An Increase in the Amount of Set-Asides Hurts Consumers**

110. As previously discussed, increasing the amount of the proposed set-aside spectrum is bad policy and will ultimately hurt consumers. The larger the amount of set-aside spectrum, the higher the prices of the open spectrum licenses, and the more pronounced the impact of fake bidding. These increases in cost cannot be ignored, and nationwide providers must adjust their retail strategies accordingly through a combination of lower service quality, higher retail prices, and reduced infrastructure investment.

3. **Q1C: Eastlink’s Eligibility Comments Represent a Vote**

111. Eastlink agrees with most of the proposed eligibility requirements and spends much time arguing that eligible bidders must be wireless and active in a specific region. Eastlink’s comments are largely meaningless as they fail to reveal the respondent’s rationale for supporting the proposed eligibility rules. As such, they largely represent a vote to support the proposal rather than careful thought as to how the proposed eligibility rules would impact Canadian consumers.

1. **Q1D: Eastlink’s Sales Prohibition Comments Represent a Vote**

112. As in the other parts of its comments, Eastlink offers its affirmative vote for the proposal rather than providing a reasoned response why the proposed five-year sales prohibition would serve the public interest.

**IX. REPLY TO THE ICE WIRELESS COMMENTS**

113. Ice Wireless’ comments differ from those of the Other Respondents because the company considered the public consultation to be a call for a vote. As such, Ice Wireless simply voiced its assenting or dissenting opinion with respect to ISED’s questions.
114. Although Ice Wireless only provides high-level explanations, it is obvious that the respondent is not considering the public interest but its own financial gain. For instance, in support of the set-aside proposal, the respondent states, “Ice Wireless supports any measure which favours new entrants and prevents further concentration of market power in the wireless service industry.” Of course, an individual market player seeks to maximize its profits. However, a call for public policy considers not the individual provider’s profit curve but social welfare.

X. REPLY TO OTHER COMMENTS

115. Interestingly, unlike other regional providers, Sasktel finds “In Saskatchewan, there is an economic limit to the number of viable competitors the market can sustain.” That is correct but applies to all markets—Saskatchewan is the norm, not the exception. Supplying mobile wireless capacity requires high fixed costs. Providers must recover these costs principally from their subscribers. However, with market forces setting the retail prices, if a provider cannot attract a sufficiently large subscriber base, it will not be sustainable. Only competitive forces can reveal how many providers a particular area can sustain. As explained above, all provinces and many areas already have four providers. In the remaining areas, regulation cannot and should not create a fourth choice as this damages the market and fails to allocate the scarce spectrum most efficiently.

116. Tbaytel, on the other hand, determined that a fourth choice is desirable. However, it recommends, “the proposed set-aside spectrum should be limited to a particular sub-set of regional service providers that are best positioned to compete in the commercial

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108 Ice Wireless, ¶ 2.
109 Sasktel, p. 2.
mobile service market.”\textsuperscript{110} This recommendation is economically incorrect. First, as explained, regulation should not create a fourth choice. Second, further limiting the allocation of spectrum to some undefined criteria with the objective of selecting bidders that will survive in the market makes even less economic sense. If so, ISED should abandon the auction and conduct a beauty contest. Finally, although I agree that spectrum must be allocated to those who will use it for the benefit of society, this can easily be resolved through a spectrum rollout condition whereas license holders need to deploy their networks according to a predetermined schedule.

117. Finally, Xplornet advocates a 10 MHz to 20 MHz spectrum cap within the set-aside licenses. It appears that if the even distribution of the set-aside spectrum were the objective then it would be much simpler to allocate the spectrum in equal proportions to those willing to deploy service in a particular license area. It is also worthwhile mentioning that although Xplornet owns spectrum in Manitoba (which it acquired through Bell’s acquisition of MTS), it has yet to enter as the fourth regional provider, thereby ensuring that each province in Canada has four mobile wireless providers.

\section*{XI. CONCLUSIONS}

118. The Other Respondents’ comments ignore the interests of Canadian consumers. Spectrum is a scarce resource, and ISED must allocate it in a manner that is most beneficial to society. Thus, whether the design of the upcoming 600 MHz auction should contain set-asides is a question of public interest—nothing else. If it serves the public interest, then ISED should include set-asides. If not, ISED should exclude them because they are

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\textsuperscript{110} Tbaytel, p. 3.
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harmful. As Dr. Eisenach’s and my work have shown, the mobile wireless market in Canada is competitive and including set-asides in the 600 MHz auction will increase retail prices and will negatively affect quality of service. This is bad for consumers, thus set-asides are against the public interest.

119. The Other Respondents’ comments focus principally on their financial resources, spectrum holdings, and various difficulties in operating in the marketplace. Although these are relevant considerations for maximizing firm profits, they are not relevant when evaluating the public interest. The Other Respondents’ fail or do not even bother to examine the competitive nature of the market. Rather, they resort to anecdotal and often incorrect evidence, inaccurate comparisons with other countries’ statistics and the single statement by the Competition Bureau in a merger that the agency decided to settle without further investigation. Bad evidence yields bad policy, and I recommend that ISED not follow the recommendation of the Other Respondents and instead refrain from implementing the set-aside proposal.