

Joint Internet Society and Mozilla
Response to Innovation, Science and Economic Development's (ISED)
Consultation on New Access Licensing Framework, Changes to Subordinate
Licensing and White Space to Support Rural
and Remote Deployment

As posted in: Canada Gazette, Part I, Volume 155, Number 33

Published: August 14, 2021

Notice reference number: SLPB-004-21

Introduction

The importance of access to affordable broadband is a now commonplace insight from the COVID-19 pandemic. However, the pandemic has revealed something even more important for policymakers and communication regulators; it has made it clear that inclusion must be a top priority if the Internet is not to become an amplifier of inequality.

Communication technology is a natural amplifier of human activity. Those with affordable access to communication move forward while those without access are quite literally invisible to the connected. Broadband networks are delivering ever greater utility, from education to commerce to social safety nets with the unfortunate side effect that the social and economic gap between those with affordable access and those without increases by default. The inescapable conclusion from this is that inclusiveness, making sure everyone has affordable access to broadband, must be a policy priority.

In its history, the telecommunications sector has gone through important changes from its origins as state-provided public utility, then privatisation and market liberalisation. These changes have enabled the rapid spread of telecommunications networks around the world, not to mention the growth of the Internet. But the growing value of "being connected" combined with slowing growth in economically depressed and rural areas suggests that a new way of looking at connectivity is needed in order to address growing inequality and the need to focus on policies of inclusion. In this context, we welcome ISED's decision to create more flexible access to spectrum in rural areas.

Earlier decisions to make spectrum available in rural areas such as Remote Rural Broadband Service (RRBS) and, more recently, the TV White Space (TVWS) dynamic spectrum framework are laudable but are limited to the deployment of Point-to-Point and Point-to-Multipoint links. Shared spectrum in frequencies designated for International Mobile Telephony (IMT) LTE/5G services has the potential to be a much more significant intervention for a number of reasons:

- Mobile handsets are designed to communicate on IMT frequencies. With RRBS and TVWS, broadband connections must be translated into WiFi hotspots in order to communicate with mobile smartphones. The availability of IMT spectrum to local access service providers means that it may be possible to serve an entire community with one or two towers as opposed to the many WiFi access points that would be required to achieve something similar in the ISM bands;
- A wide ecosystem of manufacturers of LTE eNodeB mini-basestations has emerged globally producing equipment that operates in many LTE frequency bands, and which can be purchased for a few thousand dollars¹. Affordability combined with increased ease of deployment means that LTE network technologies are within the financial reach of small operators; and,
- The range of IMT frequencies that have the potential for use under this scheme suggest a wide range of possible use cases from IoT to high-speed broadband.

Implementation of this shared spectrum strategy has the potential to address the fact that the high prices paid via spectrum auctions² in order to access IMT/LTE spectrum has effectively excluded small operators from using these technologies in spite of their increasing affordability and the significant growth of the manufacturing ecosystem.

Recognising an Ecosystem of Operator Types

We are encouraged by the stated objective of supporting “innovation and the provision of rural services.” However, the consultation appears to be focused on commercial operators. This is not surprising as, around the world, most shared IMT spectrum strategies, such as that of the UK regulator³ and the German regulator,⁴ have focused on Private LTE network operators as the likely users of their spectrum. This is often taken to mean corporations with large industrial premises who may benefit from the operation of their own high-speed broadband network.

However, the rural focus of this consultation suggests that there should be more emphasis on the type of operators that are going to provide sustainable, affordable broadband in difficult to reach communities. In particular, we encourage ISED to recognise and make provisions for non-profit operators ranging from community networks to cooperatives to municipal networks. We believe that competition may not be feasible in many hard-to-reach areas. Locally owned non-profit operators may be better suited to creating affordable, sustainable access in these areas. We encourage ISED to recognise non-profit operators in the context of this consultation.

The 2018 Report on Broadband Connectivity in Rural Canada⁵ by the Standing Committee on Industry, Science and Technology specifically proposes that:

“The Government of Canada consider the spectrum allocation process for the purpose of broadband deployment. More specifically, it should focus on the scope of licences, pricing, and

¹ See appendix A for an indicative list of low-cost LTE basestation and RRH manufacturers.

² [Wireless prices have nowhere to go but up after carriers spent big on 5G spectrum auction](#), 16 Aug 2021, Globe and Mail.

³ OFCOM: [Statement: Enabling wireless innovation through local licensing](#) 25 July 2019

⁴ ITU / World Bank Digital Regulation [Spectrum licensing: local and private networks in Germany](#) 6 Oct 2020

⁵ [Broadband Connectivity In Rural Canada](#): Report of the Standing Committee on Industry, Science & Technology 2018

effective use of allocated spectrum, including ensuring that small providers, non-profit providers, and non- incumbent providers have reasonable access to spectrum for broadband deployment.”

Indigenous Communities and Radio Spectrum

Building on the need to recognise an ecosystem of operators and operator types, this consultation represents a particular opportunity to address the broadband access needs of First Nations, Inuit and Métis communities.

In 2016, the Canadian telecommunications regulator, Canadian Radio-television and Telecommunications Commission (CRTC), established a speed target of 50 Mbps download and 10 Mbps upload for all Canadians, including residents of remote regions.⁶ Yet as of 2018 (the most recent year for which data is available), only 71.2 percent of households in the Yukon and 61.8 percent in the NWT had access to fixed Internet speeds of 50/10. The situation is worse in Nunavut, where less than half of households have access to at least 5 Mbps, and no households have access to speeds up to 16 Mbps or faster. For First Nations on-reserve, only 31.3 per cent of households have access to the 50/10 target speeds.⁷ This contrasts against 87.4 percent of all households in Canada having Internet access that meets these standards⁸.

Other countries, notably Mexico, New Zealand, and the United States, have established spectrum management mechanisms to serve Indigenous communities:

- In Mexico, in 2015, the regulator IFETEL set aside 2x5MHz of spectrum in the 800MHz band⁹ (in the range of 824-849 and 869-894 MHz) for communities being served must be less than 2,500 people or be designated as an Indigenous region or designated as a priority zone. This regulation has led to the deployment of more than a dozen GSM base stations in underserved, Indigenous regions by community-owned operators¹⁰. As of 2021, the government has ruled that these operators should be exempt from spectrum fees¹¹.
- In the United States, in 2020, as part of the Federal Communications Commission (FCC) decision to auction the 2500MHz band, a decision was taken to allow Indigenous communities the opportunity to acquire the spectrum over their lands at no charge. Known as the Rural Tribal Priority Window, the regulatory dispensation has resulted in 270 licenses being issued¹² to qualifying Tribes as of mid-2021.
- In New Zealand, the campaign for spectrum rights by the Māori began as far back as 1990 when they questioned the right of the government to license radio spectrum without consulting Indigenous communities. More recently, in late 2019, 50MHz of 3.5GHz spectrum was assigned¹³

⁶ See <https://crtc.gc.ca/eng/archive/2016/2016-496.htm>

⁷ CRTC. (2019). Communications Monitoring Report 2019.

⁸ CRTC [LTE and Broadband Availability](#) 2019

⁹ IFETEL ACUERDO mediante el cual el Pleno del Instituto Federal de Telecomunicaciones modifica el [Programa Anual de Uso y Aprovechamiento de bandas de frecuencias 2015](#).

¹⁰ WIRED [Where Cellular Networks Don't Exist, People Are Building Their Own](#) 2015

¹¹ APC [Landmark ruling in Mexico allows communities to provide service in areas that the telecoms market does not reach](#). Feb 2021

¹² <https://www.fcc.gov/rural-tribal-window-updates>

¹³ New Zealand: Cabinet paper: [Early Access to 5G Radio Spectrum](#) 2019

to the Maori until October 2022 when more permanent arrangements are expected to be concluded.

We believe that the proposal to introduce a new Access Licensing Framework for unused spectrum is a positive and important step in enabling communities to connect themselves. However, given the disproportionate lack of affordable Internet access in Indigenous communities, we are concerned by the lack of consideration as to how this process should be structured with respect to Indigenous rights. We believe there is an opportunity to learn from examples of spectrum regulations in support of Indigenous Peoples around the world and create forward-looking spectrum regulations that directly empower Indigenous communities.

Summary of Recommendations:

1. We fully support the introduction of the Access Licensing Framework but encourage ISED to adopt a framing that is more oriented towards digital inclusion and the recognition and enablement of an ecosystem of operator types that can provide affordable access in challenging regions. In particular we would like to see acknowledgement of community networks, cooperatives, and even municipal network operators.
2. We encourage ISED to consider other bands such as Band 40 and 41 for inclusion in the framework.
3. We encourage ISED to adopt a flat fee mechanism for Access Licensing, similar to that implemented by OFCOM in order to simplify cost planning and administration.
4. We encourage ISED to make at least 2x5MHz of spectrum available in Band 8 in order to enable its use for broadband services.
5. We encourage ISED to develop a “toolkit” to support the license application process and lower the barrier for rural communities who wish to take advantage of this new framework.
6. ISED should adopt specific provisions within the Access Licensing framework to enable Indigenous communities to address their own connectivity challenges. This should include:
 - a. Fee waivers for Indigenous operators;
 - b. First right of refusal for Indigenous communities in rural Tier 5 regions on spectrum license applications affecting their territories; and,
 - c. Reimbursement of the cost of developing the application in order to ensure all potential applicants have access to the resources necessary to successfully access their spectrum over their lands.
7. Beyond this consultation, we strongly encourage ISED to engage and consult with Indigenous communities, to understand their needs with respect to how the spectrum over their lands is allocated.
8. Consideration should be given to the rights of Indigenous governments and Indigenous-owned entities to the spectrum over their lands.
9. We encourage ISED to consider the implementation of regulations regarding synchronised, semi-synchronised and unsynchronised operation by shared spectrum license holders in terms of geographical areas and type of cells. Synchronised operation mitigates interference between

basestations therefore allowing coexistence between adjacent networks without the need for guard bands or additional filters. This operating mode simplifies network deployment because no additional interference mitigation is required."

However, recognising that synchronisation may present challenges in terms of time between differing types of technology, notably 5G-NR and LTE-TDD, we recommend that ISED:

- a. set shared bands to a single TDD pattern compatible with both LTE and 5G NR; and,
- b. consider the necessary geographic separation and/or guard band required to ensure the compatible operation of differing TDD patterns between urban 5G operators and rural 4G/5G operators

Responses to specific questions

Access Licensing Framework

Q1 ISED is seeking comments on its proposal to implement a new Access Licensing framework to make licences available in rural and remote areas where there is unused spectrum.

We fully support the concept of the Access Licensing framework to make spectrum licenses available in rural areas. We encourage ISED to be transparent in the methodology for co-existence calculations.

Q2 ISED is seeking comments on its proposal to issue access spectrum licences and access radio licences on a first-come, first-served basis.

We agree that a first-come, first-served license assignment process may be best suited to this framework. However, Indigenous governments and Indigenous-owned entities should have first right of refusal for any access spectrum licences and access radio licences issued over their lands.

Q3 ISED is seeking comments on its proposal to use the rural and remote Tier 5 service areas as the basis to determine the rural and remote areas in which it will apply access licensing.

We support the use of Tier5 service areas with the provision that ISED should reserve the right to consider and implement smaller Tier areas should Tier 5 regions prove problematic. More detail on how the Tier5 services were calculated would be appreciated.

Q4 ISED is seeking comments on its proposed principles to be used when considering spectrum licensed or radio licensed bands where the proposed Access Licensing framework will apply.

We generally agree with the proposed criteria.

Q5 ISED is seeking comments on other principles it should take into account when considering bands where the proposed Access Licensing framework will apply.

N/C

Q6 ISED is seeking comments on adopting a flexible use licensing model for fixed and mobile services when issuing access spectrum licences.

We support flexible use licensing.

Q7 ISED is seeking comments on its proposal to use Tier 5 service areas for the proposed access spectrum licences and any associated potential technical challenges should this process be applied to all commercial mobile or flexible use frequency bands.

N/C

Q8 ISED is seeking comments on any future adjustments to the licence areas for access spectrum licences, including consideration of more localized areas (e.g. smaller than Tier 5).

The Tier5 service areas should be reviewed at the expiry of the first round of licenses (i.e. after three years) and consideration of additional granularity in service area size be done then.

Q9 ISED is seeking comments on its proposed process for identifying rural and remote Tier 5 service areas in which there is unused spectrum that would be made available for access spectrum licensing.

We would like more information on how multiple applications for spectrum in a single Tier5 service area will be handled. Does spectrum assigned through this process grant exclusivity in the Tier5 service area for the frequencies assigned? What is the likely size of the assignments? Is the assignment size fixed? How many licenses might theoretically be granted across the 850MHz and PCS band in a single Tier5 service area?

Q10 ISED is seeking comments on its proposal to impose a condition of licence to prohibit existing primary and subordinate licensees' deployment in areas for which an access spectrum licence has been issued.

We support this condition.

Q11 ISED is seeking comments on its proposal that stations already deployed by primary or subordinate spectrum licensees within their service areas would be protected from subsequent deployment under access spectrum licences.

We agree that the existing deployments of primary and subordinate spectrum licensees should be protected.

“Under Option 1, in order to be eligible for an access spectrum licence, at the time of application, an applicant must not hold a spectrum licence for undeployed commercial mobile, fixed, or flexible use spectrum, in the same Tier 5 licence area as the area for which it is seeking an access spectrum licence.

Under Option 2, in order to be eligible for an access spectrum licence, at the time of application, an applicant must not hold a spectrum licence, whether deployed or undeployed, for commercial mobile, fixed, or flexible use spectrum, in the same Tier 5 licence area as the area for which it is seeking an access spectrum licence.”

Q12 ISED is seeking comments on the above options for eligibility.

We support Option 2 that an applicant must not hold a spectrum license whether deployed or undeployed in the Tier5 service area in order to maximise the opportunity for new operators to gain access to spectrum.

Q13 ISED is seeking comments for Option 1 and Option 2, specifically should the deployed and/or undeployed spectrum be based on any frequency band (e.g. 2500 MHz) currently held by the applicant or only the band (e.g. PCS band) for which the application is made?

We believe the Access Licensing framework should only be available to those operators who do not already hold an IMT spectrum license in the Tier5 service area.

Q14 ISED is seeking comments on its proposal to issue access spectrum licences with a three-year licence term and the proposed wording of the condition of licence above.

We support both the license term and the wording of the condition.

Q15 ISED is seeking comments on its proposal that access spectrum licences not contain transfer, subdivision or subordination privileges.

We agree that access spectrum licenses should not contain transfer, subdivision, or subordination privileges as that would add a level of complexity to this new granular license scheme which would be undesirable.

Q16 ISED is seeking comments on its proposal to align the deployment conditions for access spectrum licences with the relevant conditions of licence currently applied to the licences in the specific band, taking into account any differing characteristics such as Tier sizes, and the timing as to when those deployment requirements should apply. ISED is also seeking comments on the appropriateness of existing deployment requirements for private networks.

We believe that it is inappropriate to apply existing license conditions to access spectrum licensees. What is appropriate for large scale national or sub-national license holders, is unlikely to always be a good match for small operators addressing the most challenging access environments. Almost by definition, the Tier5 rural service areas are the least attractive regions for mobile network operators. As such, applying the same deployment requirements seems inappropriate. We suggest that at the end of Year 1, the license must have made ‘reasonable’ efforts to deploy network equipment in the licensed frequencies. At the end of the three year license period, validation should come from users and communities served by the licensee.

Q17 ISED is seeking comments on its proposal to apply the conditions of licence set out in annex B to access spectrum licences issued through the proposed Access Licensing framework.

Regarding Annex B, we have the following comments:

- B2. Fees. Given that the objective of these licenses is to maximise their uptake, and that service areas are small, and that the license period is short, we suggest that a simplified approach to fees be adopted such as that taken by OFCOM who have adopted a simple one-off license fee for their Local Access license¹⁴. A simple flat fee structure will make for one less calculation in business sustainability planning.
- **B2. Fees. We believe that Indigenous communities applying for spectrum should be exempt from spectrum fees.**
- B9. Lawful interception. While we support lawful interception, we wonder whether this clause is more relevant to operator rather than spectrum licensing?
- B10. Research and Development. This clause does not seem relevant to this license as the very licenses themselves are a kind of R&D.
- B11. Mandatory antenna tower and site sharing. Given that likely licensees are either corporates deploying their own private LTE networks or small operators providing access in challenging areas, an infrastructure sharing requirement seems inappropriate.

Q18 ISED is seeking comments on its proposal to make 800 MHz cellular available for access spectrum licenses in rural and remote Tier 5 service areas in which the existing primary or subordinate has no deployment.

We support this.

Q19 ISED is seeking comments on its proposal to modify the CTFA, where relevant, to change the existing fixed service allocation to primary status in the 824-849 MHz/869-894 MHz range, noting that the fixed service is already allocated on a primary basis in the 890-894 MHz portion.

N/C

Q20 ISED is seeking comments on its proposal to make PCS blocks A to F available for access spectrum licenses in rural and remote Tier 5 service areas in which the existing primary or subordinate licensee has no deployment.

N/C

Q21 ISED is seeking comments on any other spectrum licence bands that meet the principles proposed in section 5 that could be considered for access spectrum licensing.

We propose that Band 41 (2500MHz) and Band 40 (2300MHz) be considered under the access license framework. These frequencies offer a reasonable balance of range and broadband capacity. Both bands have support from popular WISP equipment manufacturers like Cambium and Mikrotik. See Appendix A for more equipment manufacturers.

¹⁴ https://www.ofcom.org.uk/_data/assets/pdf_file/0037/157888/local-access-licence-guidance.pdf

Q22 ISED is seeking comments on the proposal to generally adopt the same technical requirements, including coordination requirements, as published in RSS-132 and SRSP-503 in the cellular band, and RSS-133 and SRSP-510 in the PCS band for future access spectrum licences.

N/C

Q23 ISED is seeking comments on the above proposal to amend the Condition of Licence concerning "International and Domestic Coordination" for all existing spectrum licensees in blocks A and B of the cellular band and blocks A through F, inclusively, of the PCS band.

More generic wording such as that employed by OFCOM in the issuance of the 800MHz spectrum license might offer ISED more flexibility for any future shared spectrum strategies. e.g. *"For the avoidance of doubt the Licences will not guarantee exclusive use of the spectrum awarded. In the future we may grant additional authorisations to allow the use of all, or part, of the spectrum, including the spectrum that is the subject of this Award Process. We would develop and consult on the conditions of use under any such additional authorisations in order to manage the risk of harmful interference."¹⁵*

Q24 ISED is seeking comments on its proposal that existing cellular and PCS stations under spectrum licences will be protected from access spectrum licence operations and would not be required to coordinate with new access spectrum licence operations in adjacent service areas.

We support this.

Q25 ISED is seeking comments on its proposal that any future stations deployed by existing cellular and PCS spectrum licensees would be subject to the coordination rules in SRSP-503 and SRSP-510 applied at the new Tier 5 service area boundary where an access spectrum licence has been issued.

We support this.

Q26 ISED is seeking comments on its proposal that existing radio licensees operating standard systems in the PCS band would be protected from access spectrum operations and access spectrum licensees may not trigger displacement of existing radio licences in the PCS band.

We support this.

Q27 ISED is seeking comments on the process for making access spectrum licences available and the options described above.

N/C

Q28 Under both options, ISED is seeking comments on its proposal to begin access spectrum licensing three months after the publication of the decision.

N/C

¹⁵ OFCOM: [The award of 800 MHz and 2.6 GHz spectrum](#) Information Memorandum. 2012. Section 4.2, page 43

Q29 Under both options, ISED is seeking comments on its proposals to limit the number of access spectrum licence applications to

“Option 1: 20 per applicant per 12 month period

Option 2: 5 per applicant at the opening of the access licensing process for each tranche”

N/C

Q30 Under Option 2, ISED is seeking proposals on how it should prioritize Tier 5 licence areas and spectrum blocks if it adopts a sequential release of spectrum for access spectrum licensing. Proposals should address the key considerations of equitable geographic distribution, coverage, impacts on existing licensees, potential business cases, and timeliness.

N/C

Radio Access Licenses

Q31 ISED is seeking comments on its proposal to issue site-specific access radio licences within rural and remote Tier 5 service areas under the Access Licensing framework.

N/C

Q32 ISED is seeking comments on its proposal to follow its LMR licensing process to receive and review applications for access radio licences.

N/C

Q33 ISED is seeking comments on its proposal not to limit the number of access radio licence applications an applicant may submit via the Spectrum Management System for these bands.

N/C

Q34 ISED is seeking comments on potential eligibility restrictions for access radio licences.

We would like clarity as to whether a community-owned and -operated broadband network would constitute a private network.

Q35 ISED is seeking comments on its proposal to apply the above conditions of licence to access radio licences.

Regarding the License Term, we understand the rationale for having a one-year license as opposed to three-year license but note that there is no mention of an “expectation of renewal”. Some consideration of expectation of renewal is necessary for operators to justify network investments.

Q36 ISED is seeking comments on its proposal to allow broadband use in the 900 MHz LMR band as shown in figure 6.

We support the proposed use of 900MHz for broadband. However, the overwhelming majority of LTE eNodeB manufacturers provide LTE equipment which requires a minimum of 2x5MHz of spectrum. Indeed, 2x5MHz is a reasonable minimum for broadband service delivery. We encourage ISED to make 2x5MHz of spectrum available to licensees in this band.

Q37 ISED is seeking comments on its proposal to issue access radio licenses in the 897.5-900.5 MHz and 936.5-939.5 MHz portions of the 900 MHz LMR band in rural and remote Tier 5 service areas and only in locations within those service areas where there will be no interference to existing LMR operations.

We support this with the above caveat regarding the limitations of 2x3MHz.

Q38 ISED is seeking comments on availability of equipment for the proposed broadband service, including the feasibility of modifying 3GPP band 8 equipment.

Band 8 is one of the most popular frequencies in the 3GPP universe. Given that modern radio equipment is increasingly defined by software as opposed to hardware, we believe that manufacturers will make modified Band 8 equipment available.

Q39 ISED is seeking comments on the potential use cases of 3/3 MHz for broadband services, including the potential for 5G deployment.

See above comments on the limitations of 2x3MHz. We strongly support 2x5MHz.

Q40 ISED is seeking comments on the feasibility of also making 896-901 MHz and 941-946 MHz available for broadband at the same time as 987.5-900.5 MHz and 936.5-939.5 MHz.

We support this.

Q41 ISED is seeking comments on its proposal to use the same methodology for determining geographic separation for broadband service as already included in SRSP-506 for land mobile systems.

N/C

Q42 ISED is seeking comments on whether the 1.5 MHz and 500 kHz of separation are sufficient to protect the adjacent band Air-Ground Radiotelephone Service, fixed service and Narrowband Personal Communications Service.

N/C

Q43 ISED is seeking comments on the potential or actual benefits of subordinate licensing to increase rural broadband access and accommodating new innovative network usage.

N/C

Q44 ISED is seeking comments on ways in which to streamline the general application requirements for subordinate licences as set out in sections 5.6.3 and annex D of CPC-2-1-23. ISED also seeks proposals to streamline the application process for all subordinate licence applicants, including those in commercial mobile bands who must also provide material addressing the criteria and considerations in section 5.6.4 of CPC-2-1-23. In these proposals, ISED also seeks comments as to how parties can demonstrate (e.g., an attestation, or other commitment) that their request for a subordinate licence does not constitute a transfer, deemed transfer, or prospective transfer as discussed in section 8.2.1 above.

N/C

Q45 ISED is seeking comments on facilitating subordinate licensing and encouraging secondary market transactions including:

- “Should additional changes be made to existing licences that will encourage the use of subordinate licences as a means to help deploy more services?”
- Given ISED's regulatory role, are there any issues or actions ISED should consider?”

N/C

Q46 ISED seeks comments on what additional information, if any, should be included in the draft form shown in annex D.

N/C

TVWS & RRBS

Q47 ISED is seeking comments on its proposal to remove the current restriction on database hosting in order to facilitate cloud-based database hosting solutions.

We support this.

Q48 ISED is seeking comments on its proposal to allow the use of TV channels 3 and 4 by all types of WSD.

We support this.

Q49 ISED is seeking comments on its proposal to no longer renew existing RRBS licences after March 31, 2027.

We support this.

