

Question	FONTUR International Comments / questions
<p>Q1 – What future changes, if any, should ISED examine with regard to the existing licensing regime to better plan for innovative new technologies and applications and allow for benefits that new technology can offer, such as improved spectrum efficiency?</p>	<p>The introduction of CBRS in the US is opening new doors for increase indoor penetration and capacity growth in under served areas. Opening spectrum that fits the framework of smaller service areas/ local service areas limited to couple of hundred meters will allow underserved areas seek options for improved wireless service offering for Tenants and population</p> <p>Currently Investment in wireless infrastructure for Wireless carriers in Canada is based heavily on ROI, leaving several areas underserved by they service even within dense populated areas.'</p> <p>FONTUR see the CBRS and similar framework of frequencies as a good business opportunity for small wireless network integrators and small network operators. Helping solve the digital divide.</p>
<p>Q2 –Do you agree with the above assessment on demand for commercial mobile services in the next few years? Is there additional information on demand, which is not covered above, that should be considered? If so, please explain in detail.</p>	<p>The Growth of M2M (IoT) devices will have two different segments.</p> <ul style="list-style-type: none"> a) Low Latency – High data, supplied by technologies in the 3GPP stream (4G, 5G) b) High Latency – Low data, supplied by other technologies leveraging unlicensed spectrum (LoRA, Weightless-C, Sigfox) <p>We believe that special considerations need to be made to limit the interference and congestion in the unlicensed band to increase the spectral efficiency of this technologies and create a balanced approach for M2M connectivity that provide high value at low cost</p>
<p>Q3 – What new technology developments and/or usage trends are expected to address traffic pressures and spectrum demand for commercial mobile services? When are these technologies expected to become available?</p>	<p>Current technologies like LoRA, Weightless and Sigfox are currently available, but face challenges with spectrum congestion. Saturation of ISM band is creating limitation on capacity on the LPWAN technologies trying to leverage that spectrum. Clearing the use of this spectrum for increased IoT capabilities leveraging LPWAN, would create a significant contribution to competition in the market place accelerating the IoT adoption and improving the value to the customer, increasing competition to the large network operators.</p>

Q4 – Recognizing the trend of increasing commercial mobile traffic, what operational measures (e.g. densification, small cells or advanced traffic management) are being taken to respond to, and support, increasing traffic? To what extent are these measures effective?	<p>Densification and increase indoor coverage is one of the strategies network operators are using to improve their capacity, but these investments are reaching levels where ROI is not demonstrating high revenue, leaving areas underserved. This opens up Increased opportunities for small network operators to develop these areas and collaborate with large operators in services integrations (roaming and handoff) - Currently Large operators are unwilling to connect to 3rd party systems. Private DAS owners should be allowed to operate either by working with existing network operators or deploying private spectrum.</p> <p>Enabling and defining opportunities for Private Wireless networks to develop might open further investment in wireless network densification not driven necessarily by the Large network operators.</p>
Q5 – Do you agree with the above assessment of demand for licence-exempt spectrum in the next few years? Is there additional information regarding demand, which is not covered above, that should be considered? If so, please explain in detail.	Yes,
Q6 – What new technologies and/or sharing techniques are expected to aid in relieving traffic pressures and addressing spectrum demand for licence-exempt applications? When are these technologies expected to become available?	No comments
Q7 – What existing licence-exempt frequency bands will see the most evolution in the next five years? Are there any IoT applications that will have a large impact on the existing licence exempt bands? If so, what bands will see the most impact from these applications?	<p>We believe that the growth of IoT (M2M) devices using the unlicensed spectrum in the 900mhz (ISM Band) will increase exponentially in the next 2-4 years, creating challenges for the ultra low cost IoT connectivity.</p> <p>We also see the increase of Wi-Fi demand from the users starting to create saturation at the currently available bands (consumer and M2M usage)</p>
Q8 – Will the trend for offering carrier-grade or managed Wi-Fi services continue to increase over the next five years? If so, will this impact congestion in Wi-Fi bands and which bands would be most affected?	<p>Yes, increase in carrier-grade Wifi will continue to grow. With the cost of current Wireless Data services in Canada continued to be high, subscribers of such services continue to seek the free wifi. Carrier Grade offers added security, better RF design and spectrum use. There is an increase trend in replacing legacy 2.4Mhz Devices with new ones with 5Mhz band for Wifi (home and office) reaching peak levels in the 5Mhz band</p>

Q9 – ISED is seeking comments on the above demand assessment for MSS and earth observation applications for the period 2018-2022. Is there additional information on demand, which is not covered above, that should be considered?	No comments
Q10 – ISED is seeking comments on the above demand assessment for FSS/BSS for the period 2018-2022. Is there additional information on demand, which is not covered above, that should be considered with regards to the below bands? a) C-band b) Ku-band c) Ka-band	No comments
Q11 – What and how will technology developments and/or usage trends aid in relieving traffic pressures and addressing spectrum demand for satellite services? When are these technologies expected to become available?	No comments
Q12 – What satellite applications (e.g. broadband Internet, video broadcasting, backhaul, etc.) do you consider a priority for the period 2018-2022?	More accessible satellite connections for low bandwidth (<25Mbps) connections for backhaul of remote site telemetry.
Q13 – Do you agree with the above assessment on demand for backhaul in the next five years? Is there additional information on demand, which is not covered above, that should be considered? If so, please explain in detail.	No comments
Q14 – Backhaul service in Canada is delivered using a variety of solutions, including fibre optics, microwave radio and satellites. What changes, if any, are anticipated to the mix of backhaul solutions employed?	No comments
Q15 – What and how will technology developments and/or usage trends aid in relieving traffic pressures and addressing spectrum demand for backhaul services? When are these technologies expected to become available?	No comments
Q16 – Will the demand for commercial mobile, licence-exempt, satellite, or fixed wireless services/applications impact the demand for backhaul spectrum? If so, how and which of these services/applications will create the most impact?	No comments
Q17 – Is there a range or ranges of frequencies that will be in higher demand over the next five years? Why is higher demand anticipated for these frequency ranges?	No Comments

