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Submission to the Regional Telecommunications Review 2021
Australia

About the Dynamic Spectrum Alliance.

The Dynamic Spectrum Alliance (DSA)[1] is a global, cross-industry, not for profit organization advocating for laws, regulations, and economic best practices that will lead to more efficient utilization of spectrum and foster innovation and affordable connectivity for all.

DSA is a global organization focused on promoting spectrum sharing innovation to get the most out of wireless resources. Our team is made up of worldwide technology experts, making the DSA the shared spectrum go-to organisation for regulators and policymakers all over the world.

We advocate for policies that promote unlicensed (also known as Class Licenced in Australia) and dynamic access to spectrum to unleash economic growth and innovation. Additionally, we advocate for a variety of technologies that allow dynamic access to spectrum. To that end, we advocate for technology neutral Class Licensed rules.

The Case for Making 1200 MHz of the 6 GHz Band Available to Wi-Fi.

In the almost two decades since countries globally implemented the World Radio Conference 2003 decision to open new spectrum in the 5 GHz range to unlicensed devices (Class Licenced in Australia), there have been revolutionary changes in Wi-Fi technology, use cases, and demand.

In a relatively short amount of time, Wi-Fi technology has moved from an amenity that helps make broadband connectivity more useful to an essential part of broadband delivery and an essential element in enabling businesses to get work done – driven in part by the rise to dominance of mobile devices and the expectation of near-ubiquitous wireless connectivity. In the home, Wi-Fi enables multiple users to simultaneously access the Internet, work from home, fuels video streaming to smart TVs, connects appliances to enable remote diagnostics and repair, and powers security systems, thermostats, sprinkler controllers, and more. At work, Wi-Fi supports access to enterprise networks for a range of applications, supports a variety of data

[1] A full list of Dynamic Spectrum Alliance members is available on the Dynamic Spectrum Alliance's website at www.dynamicspectrumalliance.org/members.

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communications, and connects all types of devices including robots, autonomous vehicles in warehouses, factory equipment, screens and whiteboards.

A recent study conducted by Telecom Advisory Services found that the economic value of Wi-Fi in Australia is $34.7 billion in 2021, and is expected to grow to $41.7 billion by 2025. The report also noted that, "According to Opensignal, Australian wireless mobile users spend more than 52 percent of their time connected to Wi-Fi rather than using cellular data. Ninety percent of broadband households in Australia include Wi-Fi capability." The report pointed out that access to the 6 GHz spectrum band will be key to realizing the full economic value of Wi-Fi by addressing the demand and congestion issues that are taxing the 2.4 GHz and 5 GHz bands, and by enabling the further innovation, wider channels, and increased performance that 6 GHz unlocks.

At play, there is not a stadium being constructed today that does not have extensive Wi-Fi capability for fans, vendors, and administrative and team support. New uses for Wi-Fi have also appeared to address rural or disadvantaged populations, stemming from the need for low-cost infrastructure to help expand services to the unserved.

Wi-Fi is able to support many services in regional and remote areas of Australia. From RLANs which can reticulate reliable broadband to communities delivered by fibre, microwave or satellite to large agri-businesses and mines which can automate and control the machinery and systems needed to revolutionise their businesses.

By any measure, Wi-Fi is a massive success story that helps policymakers achieve critical objectives in broadband policy as well as in economic and social policy areas.

DSA responses to review questions.

1. *What telecommunications services are required in regional Australia to meet current and future needs? Are there any things regional communities and businesses need to do, but can't, on their existing services?*

   Telecommunications services generally refer to those services provided by carriers such as Telstra, Optus and TPG Telecom (Vodafone). Other regional service providers, for example Countrytell, provide broadband services mostly using Class Licenced (equivalent to US 'unlicenced') radiofrequency spectrum to support data reticulation using Wi-Fi technologies. Unfortunately, as broadband demand increases, the two bands (2.4 and 5 GHz) currently used for these services are becoming congested and unable to support ever-increasing traffic and high data-rate applications.

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In addition to business and residential broadband services, major agri-business and mining interests are increasingly reliant on wide area broadband solutions to support industry automation and increase productivity. As the scale of these automated systems grows, more spectrum will be needed.

2. *What changes in demand, barriers or challenges need to be addressed when it comes to telecommunications services in regional, rural and remote Australia?*

   Telecommunications traffic is increasingly shifting away from legacy voice networks to IP based communications. Remote communities can sometimes be served more efficiently using a single data connection which is shared via Wi-Fi. Remote mining camps often use private networks for this purpose. Remote schools and rural stations often have similar challenges.

   Widening the available public spectrum for Wi-Fi makes more accessible, industry standard and cost-effective options available to communities like these.

3. *How have the Government's policies and programs affected telecommunications service outcomes in regional, rural and remote Australia? How can these be improved?*

   As mobile network operators tend to focus service delivery on more profitable urban areas first, it will take time for 5G services to be available to people living in rural and regional areas. The recent 26 GHz spectrum auction was great news for people living in the densely populated cities; but these frequencies above are not as well suited to broadband delivery in sparsely populated areas. Low and mid-band frequency bands have been globally identified for IMT, have a current existing ecosystem and would be good candidates for 5G services in Australia. DSA advices to focus on those bands as candidates for 5G provisions instead of targeting the 6 GHz band for licensed access.

   The spectrum in the 6 GHz band is currently being planned by the ACMA. Of the 1200 MHz available, it is likely that the ACMA will allocate 500 MHz to 'RLANS' (radio broadband reticulation) in the near future. While there is pressure from some mobile carrier interests to allocate the remaining 700 MHz for 5G by way of auction, we contest that this will simply widen the digital divide and that the entire 1200 MHz should be allocated to communities and regional businesses by way of the (LIPD[2]) Class Licence. This will enable the services described above and help close the digital divide. Furthermore, it will also protect the

[2] Low Interference Potential Devices. This is the licence that covers all WiFi bands.

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current incumbents in the band (such as fixed links, fixed satellite services and others) that can coexist with RLANs.

To improve the outcome of this planning process, the Committee could recommend to the ACMA that this band be allocated in full by way of the Class licence or could advise the Minister to so direct the ACMA.

4. *How do service reliability issues impact on regional communities and businesses? How do outages, including in natural disasters, impact on communities and businesses?*

   No comments

5. *How might such impacts be addressed to ensure greater reliability? How can the network resilience be addressed in regional areas?*

   One of the key areas of advancements in Wi-Fi standards is determinism & reliability (802.11 Evolution) for connectivity and Industrial IoT applications. Each Wi-Fi generation (Wi-Fi 6, 6E, 6E R2 and Wi-Fi 7) are improving determinism through support of key features on scheduling, scalability, reliability, battery life improvement. More specifically, Wi-Fi 7, based on IEEE 802.11be[3] could provide explicit deterministic functions in support of such mission critical requirement. In addition, in case of natural disasters, when cellular towers topple, and wide area communications fails, Wi-Fi based mesh networking or Client to Client (C2C) communications can be used by communities and first responders.

6. *How did the use of digital services change for regional consumers and businesses during the response to the COVID-19 pandemic? What insights for future service delivery does this provide?*

   Wi-Fi throughput is currently delivered over just two bands (at 2.4 GHz and 5 GHz) that are shared with everything from baby monitors to Bluetooth devices. Additional spectrum for Wi-Fi was already necessary before COVID-19 and the current health crisis has only underlined how vital and pressing this need is. In the future, Wi-Fi will play an even bigger role in offloading mobile traffic than it does today with **70% of 5G mobile traffic expected**

[3] IEEE P802.11be™/D1.01, IEEE P802.11be™/D1.01, Draft Standard for Information technology—Telecommunications and information exchange between systems Local and metropolitan area networks—Specific requirements, Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications, Amendment 8: Enhancements for extremely high throughput (EHT), June 2021.

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to be offloaded onto Wi-Fi 5 compared with 60% in the 4G era[4].

More spectrum will be needed to meet this demand and increased throughput necessary for Australia, including regional consumers and businesses, to take advantage of applications such as augmented and virtual reality (AR and VR), which will be central to expediting many healthcare solutions, to on-line business and to citizen welfare. The COVID-19 conjunction of increased traffic and increased reliance on already saturated current Wi-Fi networks creates risks to Australia's connectivity and economic activity. The 6 GHz band (5925-7125 MHz) can relieve this pressure on Wi-Fi performance. By allocating this 1200 MHz block of frequencies for Class license use, bottlenecks can be removed, data rates can increase, and significant additional economic benefits unlocked.

7. *What can be done to improve the access and affordability of telecommunications services in regional, rural and remote Indigenous communities?*

   Class license use provides an additional tool to drive down connectivity costs in rural and remote indigenous communities. In the United States, Brazil, and Canada, it was found that 6 GHz Wi-Fi would improve access and affordability for remote areas, via building community broadband networks, in provisioning wireless Internet services, and as an affordable way to enable connectivity over the last few meters wirelessly. Class license use provides an alternative to cellular services provided by carriers, which may not be cost effective in many locations that are less populated. Even when supported by Universal Service Obligation (USO) funds, they are often unaffordable for many people, communities and businesses. By way of Wi-Fi in the 6 GHz band, communities could take control of their broadband needs and manage costs to the end users. This may also be a better use for USO funds in the future.

8. *How can investment in telecommunications infrastructure work with other programs and policies to encourage economic development in regional Australia?*

   Currently, USO funds are given almost exclusively to one carrier. If these funds were made available to communities along with access to 1200 MHz of spectrum in the 6 GHz band, these communities and businesses could take responsibility for their own telecommunications and broadband Internet requirements.

[4] Cisco VNI Global Mobile Data Traffic Forecast, 2017–2022. Available at https://www.cisco.com/c/dam/m/en_us/network-intelligence/service-provider/digital-transformation/knowledge-network-webinars/pdfs/1213-business-services-ckn.pdf

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9. *What role could innovation, including new models, alternative investors or new ways of doing business, play to encourage investment in regional telecommunications infrastructure? What are the barriers?*

   Community based carriers can supplement the services offered by Australia's three domestic carriers, given that often only one or two of the carriers actually provision service in some areas. Allowing community based carriers to more effectively provision service can help to drive down broadband delivery costs.

   By making the entire 6 GHz band available for Wi-Fi, community carriers will have the necessary spectrum to provision services over wider channels and close the digital divide in Australia.

10. *To what extent will new technologies enable significant change to the delivery of telecommunications services in regional Australia over the next 5-10 years? Are there any barriers to accessing these technologies?*

    Countries comprising over 30% of the world's gross domestic product (GDP) have already designated the entire 6 GHz band for Wi-Fi. Another 10% is actively considering making the whole band available. Wi-Fi 6E equipment supporting the 6 GHz band is already available, and more will soon be readily available that will enable true high throughput broadband at speeds well above those based on the already congested 2.4 and 5 GHz bands. The 6 GHz band and the new equipment will revolutionise communications in remote communities as well as the ability to automate agri-businesses and remote mines. The only barrier to accessing this technology in Australia is the allocation of the full 1200 MHz of the 6 GHz band.

    By not opening the full 1200 MHz, the risk to our local economy is that future technological advancements that come to rely on the availability of this spectrum will not be available in Australia, or be functionally impaired, allowing international competition to have an advantage.

11. *How can Government better support the rapid rollout of and investment in new telecommunications solutions in regional areas?*

    By allocating the 5925-7125 MHz frequency band for Class license and redirecting USO funding to community carriers as discussed above.

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12. *How can different levels of Government, the telecommunications industry and regional communities better co-ordinate their efforts to improve telecommunications in regional Australia?*

    No comment.

13. *What changes to Government investment programs are required to ensure they continue to be effective in delivering improved telecommunications*?

    See response to Question 11.

14. *How can regional consumers be better supported to identify, choose and use the best connectivity options for their circumstances, as well as to understand and use their consumer rights?*

    No comment.

15. *To what extent is public information on connectivity options, including predictive coverage data and speeds, sufficient to help regional customers make informed decisions? What other information is needed?*

    No comment.

16. *What other matters should the Committee consider in its review and why are they important?*

    The ACMA should be directed to take the needs of regional and remote communities into account when planning and allocating spectrum. Finally a comprehensive economic study on the global, including Australia, value of 6 GHz spectrum to WiFi devices is available **HERE**.

Please do not hesitate to contact me for further discussions or clarifications on the subject matter.

Best regards,

Martha SUAREZ
President, Dynamic Spectrum Alliance