



18 February 2021

The Manager
Economics Advisory
Australian Communications and Media Authority
PO Box 13112 Law Courts
Melbourne VIC 8010

Re: Amazon Web Services, Inc. (AWS) Submission to the Australia Communications and Media Authority's (ACMA) Response to implementation of the Spectrum Pricing Review - Consultation follow-up and consideration of submissions

AWS welcomes the opportunity to comment on the ACMA's *Response to implementation of the Spectrum Pricing Review Consultation follow-up and consideration of submissions* and commends the agency's focus on spectrum pricing to ensure the efficient use of spectrum, to maximise public benefit, to help support a competitive Australian market, and foster innovation. Through AWS Ground Station, we are committed to opening up and growing the Australian space industry by reducing costs – time, money, and coordination – that serve as barriers to entry for Australian and global businesses seeking to access the Australian market.

Thank you for considering our submission.

Yours sincerely,

A handwritten signature in blue ink that reads 'R Somerville'.

Roger Somerville (somroger@amazon.com)
Head of Public Policy, Australia and New Zealand
Amazon Web Services



Summary

AWS supports the ACMA's proposed changes and agrees that these changes, specifically the changes to spectrum cost weightings and the earth station systems approach, better reflect how spectrum can be managed for non-geostationary satellite orbit (NGSO) technology. However, AWS recommends two additional proposals: (1) reduced fees for earth receive licence taxes granted on a non-protected, non-interference basis; and (2) eliminating redundant licence taxes for earth stations utilizing the same spectrum. AWS believes these changes would better align Australia's spectrum fees with other jurisdictions and better support innovative technologies like Earth Exploration Satellite Services (EESS) that require large bandwidths on a non-exclusive basis for receive-only operations.

Background

AWS Ground Station (AWS GS) is a cloud product that enables satellite operators to access to their space workloads around the world. AWS GS supports customers' satellite commands and downlink data requirements across multiple regions quickly, easily, and cost effectively. The goal of AWS GS is to reduce costs for our customers – in terms of time, money, and coordination. The high costs to build or operate international earth stations are a major barrier to entry into the space industry. With multiple antennas at each geographically diverse AWS earth station, customers can downlink satellite data directly into an AWS region for immediate processing and distribution. AWS GS supports a wide range of NGSO use cases like EESS and IoT. New and novel space-based applications, especially in the burgeoning EESS and IoT segments, spur economic growth and job creation. With capabilities like AWS GS, satellite operators are able to scale up their ground segment use commensurate with the deployment of their on-orbit assets, reducing delay both in their infrastructure buildout and service delivery to end-users.

Comments on Consultation Proposed Changes

AWS recognises that the ACMA's proposed changes better align Australian spectrum fees with other jurisdictions' spectrum costs, which is crucial for space innovation. We also commend the systems price approach for earth station taxation, agreeing that multiple co-located antennas accessing the same frequencies do not add significantly to spectrum denial. These types of changes will foster more earth station provider innovation, which will remain a key component supporting an increasing number of space stations.

AWS also adds two recommendations to better align Australia's spectrum costs with other jurisdictions and foster space innovation. The first is a change to earth receive apparatus licence taxes. This change is needed to address the ACMA's Focus Area 1 regarding large bandwidth use cases. AWS GS specifically supports innovative EESS satellites that use large spectrum bandwidths on a receive-only, non-exclusive basis. However, there is no difference in spectrum fees in the proposed work plan between fixed earth licences for transmit and fixed earth receive licences. Even though some earth receive licences are granted on a non-protected, non-interference basis, the



fees licensees pay are exclusive use costs. Spectrum fees collected for receive-only operations calculated at exclusive cost pricing is a barrier to Australia charging globally competitive rates. Even with the new weightings and systems price licences, earth station receive-only licence taxes in Australia remain 25 times more expensive than the next most expensive jurisdiction where AWS GS operates. In AWS GS's experience, Australia is one of the few jurisdictions that charges per bandwidth for receive-only communications. Other jurisdictions, including the majority of those to which the ACMA compared satellite prices in Appendix A, charge reduced fees or only administrative processing fees for receive-only, non-protected requests acknowledging the ability for the same spectrum to be shared at the same time by other receive-only users.

Some question the ability of NGSO EESS to share spectrum, but the NGSO EESS technology is specifically engineered for this purpose. Per recommended ITU allocations, X-Band communications for EESS (8025-8400 MHz) should only be granted on a non-protected/non-interference basis. NGSO operators choosing to downlink data to earth stations in X-Band know that their operations will not be globally supported on a protected basis. These NGSO operators design their systems to share overlapping spectrum on their short-duration downlinks and do not require spectrum denial for operations. Taxes on non-exclusive use of spectrum should be further reduced by an adjustment factor of 95%, essentially requiring licensees to pay a nominal spectrum access fee within their desired band, or in the alternative, only the recovery costs of spectrum management for non-protected licences. This would better support the ACMA's first guiding principle of efficient allocation and use of the radiofrequency spectrum because it would accurately reflect the opportunity costs where no spectrum denial is created.

AWS's second proposal focuses on eliminating redundant spectrum fees for earth station licensees repeatedly accessing the same spectrum bandwidths. Even with the ACMA's proposed changes, earth station licensees like AWS GS pay multiple times to access the same spectrum. AWS understands the Business Operating Procedures for fixed earth and earth receive apparatus licences require licences to be granted on a per ITU constellation basis. In accordance with those procedures, AWS recommends the ACMA continue to grant licences on a per ITU satellite network basis but collect taxes for new licences based on the spectrum management costs as assessed by the administrative processing fee and a marginal spectrum fee. The marginal spectrum fee would be the additional charge to add to the authorized frequency range for a licence holder. For example, if AWS GS has a licence for 8025-8300 MHz to support one satellite, and then requests to support another satellite in 8025-8400 MHz, AWS GS proposes to only pay the marginal spectrum fee for the additional 100MHz of bandwidth plus the administrative processing fee. If the licensee simply requests to add a point of communication to spectrum it has already paid to use, the licensee has a marginal cost of zero and will pay the administrative costs to process the licence.



Conclusion

AWS supports the ACMA's proposed changes and is encouraged by the direction of this consultation. However, even with these changes, high bandwidth costs for receive-only operations have the potential to stifle innovation, resulting in EESS operators seeking operations outside Australia. These high receive-only fees and redundant spectrum fees to access the same bandwidth demonstrate that Australia's earth receive licence taxes still remain highly out of scale with other jurisdictions. Satellite licenses authorise many satellites to one earth station system, and the earth station licensing approach needs the same one-to-many modernisation. AWS stands ready to answer questions on its comments and engage in further consultations. Through AWS GS, we are committed to opening up and growing the Australian space industry.
