Bureau of Meteorology Response to the Department of Communications and the Arts Spectrum Pricing Consultation Paper, May 2017

Introduction

The Bureau of Meteorology (the Bureau) as a 24/7 operational public sector agency delivering high-public-value services in support of safety, security and economic productivity, and with explicit obligations under the *Meteorology Act 1955,* has a requirement for certainty in its ongoing access to certain frequency bands for both active and passive sensing applications, most of which will remain essentially unchanged for the foreseeable future. The Bureau's spectrum needs are largely met by long-term certainty of licences in predominantly internationally harmonised bands, and protected from levels of interference that would impact the effectiveness of the systems utilising these bands.

Allocation Decisions

Question: Are there times where the Government should not charge users the same amount for the same type and amount of spectrum, through the use of bespoke pricing arrangements?

Response: The Bureau is of the view that bespoke pricing arrangements not based on market principles (including the general form of opportunity cost pricing) must be applied to applications of spectrum for public good and/or scientific discovery. Both of these activities require access to bands across the entire radiofrequency spectrum, including within or adjacent to frequency ranges that are also used, or proposed for use, by commercial applications such as mobile broadband and the provision of other similar wireless communication services. (Note: Use of the word "type" is interpreted to mean spectrum that is within a certain frequency range over which propagation characteristics do not vary significantly.) Even though the Bureau's applications may utilise the same type of spectrum as other services, the way the spectrum is used differs significantly. The frequency bands involved are in most cases fixed by either natural emission frequencies of particular molecules or physical processes, or in the case of active sensing, by the optimal propagation characteristics and the nature of the interaction between the signal being transmitted and the phenomenon being sensed. Alternative bands are therefore not available or are sub-optimal for the intended purpose.

Question: What reasons justify the Government entering bespoke pricing arrangements? How can these arrangements ensure efficient allocation of spectrum?

Response: Applications of spectrum for the direct or indirect benefit of the public and for scientific discovery cannot be easily qualified with a monetary value, if at all, in which case an intrinsic value to society must be recognised by responsible governments. The degradation or cessation of these services would have wide-ranging consequences for public safety, national security and economic productivity. A government willing to reassign and sell associated spectrum, or allow services operating in adjacent bands to impose harmful interference, would be exposing the public to a high but unquantifiable level of risk by assuming that the short-term financial gain will vastly outweigh the potential consequences, including possible loss of life. In some cases the timeframe in which these consequences are realised will exceed that of any single government, resulting in loss of accountability. The possibility of licence tenures up to twenty years may mean that loss of spectrum used by the Bureau is effectively irreversible, as

the associated services such as weather radars would be decommissioned and specialist technical knowledge and skills lost.

The concept of "efficient allocation" as defined on page 12 of the Consultation Paper cannot be applied to spectrum used for public good and scientific discovery, given that the "market", comprising essentially companies that have requisite business models and sufficient funding to bid at auction, would be incapable of valuing spectrum in any context other than exploitation purely for monetary gain. By definition, the "market" can only value a resource based on its profit potential, however justification for the acquisition of more spectrum for wireless services is often in the form of quoting the perceived benefit to society of being able to stream large volumes of high definition digital entertainment content to wireless devices, anywhere, anytime. This perceived benefit is only available to the customers of the company(s) providing this service, and not to society as a whole. Therefore it could be argued that use of the associated spectrum is only of “value” to a subset of society that has the capacity to pay for the mobile service and the content.

This comment is not meant to detract from the considerable value and efficiencies that mobile phone and other wireless technology has provided to society and the economy. However, when it comes to deciding whether to sacrifice spectrum being used for public good and scientific discovery in order to support commercial applications such as IMT, governments may need to develop and apply value judgements to what spectrum bandwidth is actually being utilised for. Allocation of a limited resource such as spectrum should be prioritised based on the benefit for society as a whole. A value judgement would answer questions such as whether or not the ability to wirelessly access large volumes of streamed high-definition video entertainment content is an appropriate use of this limited resource, particularly when other high bandwidth delivery options that do not necessarily rely on RF spectrum for widespread distribution are available, or will be in the near future. Even though allocating spectrum for this type of use may be very profitable for the companies involved and therefore meet the economic definition of efficient allocation, it may not be considered by an informed Government to be a responsible use of a limited resource if it means usurping spectrum from other applications with greater intrinsic value to society.

An alternate definition of "efficient allocation" is therefore required that recognises the need to reserve spectrum for applications for which business models to exploit that spectrum for profit are not compatible with the nature and intent of the applications, and where intrinsic economic and societal value of these applications is acknowledged by responsible governments to exceed that of any commercial applications.

An efficient allocation in this context is one that:

> officially recognises the intrinsic value of the public good and scientific discovery application(s) of the spectrum,
> provides the amount of spectrum, with requisite protection from interference, in the frequency range necessary for the service to fulfil its purpose, and
> provides long-term certainty without spatial constraints (i.e. not subject to a first-in-first-served spectrum "sharing" model) to expand coverage and functionality where required to serve increasing societal needs.

Given that providers of services for the benefit of the public, such as the Bureau, do not have the incentive of profit as an overarching objective in using spectrum, they would be the best advisors to Government as to how much is needed and the required level of protection from harmful interference. The Bureau has no incentive to hold spectrum that is excess to its needs,

and indeed has no mechanism by which to do this, as it does not utilise spectrum licences. The Bureau's incentive to use spectrum for its highest value is in the provision meteorological services of the highest possible quality and effectiveness to the Australian public, and to the global meteorological community as part of its commitment to the WMO.

Administered allocations

Question: Are there scenarios where opportunity cost pricing is not a valid pricing approach for pricing spectrum?

Response: The discussion of opportunity cost pricing states that it can account for public good value of spectrum, but also quotes a statement by Ofcom that effectively defines opportunity cost as being equivalent to the market-based price of spectrum. Regardless of how a market value for spectrum is determined – whether via auction or by how much an alternate user would pay for it (so-called spectrum denial) – neither is appropriate for applications for public benefit and scientific discovery. The only method applicable in this context is purely administrative cost recovery. A similar statement by the Productivity Commission from the *Public safety mobile broadband research report* is also quoted, however, this statement should probably be interpreted in the context of the very specific application being considered by the Commission in that report i.e. whether the Government should put in place a suitable broadband network for public safety agencies or rely on a solution based on commercial mobile networks, both of which would utilise spectrum licences.

The Productivity Commission statement uses of the word "spectrum" in the context of a general reference to the RF spectrum, and also in the context of spectrum licences, as per the sentence "*This would give purchasers a strong incentive to use spectrum in an efficient way, including potentially leasing or selling spectrum access rights to a third party when it is not needed.*". It could be concluded that this statement is aimed at holders of spectrum licences as opposed to apparatus licence holders, when interpreted under the current Radiocommunications Act.

Wherever possible the Bureau makes use of commercial service providers for telecommunications with remote stations and environmental sensors, including point-to-point and point-to-multipoint communications links as well as mobile (3G and 4G) networks. Where apparatus licences are required to implement communications links, the cost is calculated by the ACMA in the same way as it would for any other applicant for a similar licence. For the sites using mobile phone data communications, the Bureau pays the market rate as would any other customer of these networks. In other words the Bureau pays for its communications services and/or licenses at the rate determined by the ACMA using market or opportunity cost methods.