



AMTA Submission:

Five-year spectrum outlook

2011-2015

**The ACMA's spectrum demand analysis and
Indicative work programs for the next five years**

March 2011

August 2011

Introduction

The Australian Mobile Telecommunications Association (**AMTA**) is the peak industry body representing Australia's mobile telecommunications industry. Its mission is to promote an environmentally, socially and economically responsible, successful and sustainable mobile telecommunications industry in Australia, with members including the mobile Carriage Service Providers (CSPs), handset manufacturers, network equipment suppliers, retail outlets and other suppliers to the industry. For more details about AMTA, see <http://www.amta.org.au>.

AMTA supports the Australian Communication and Media Authority (**ACMA**) in its efforts to plan for Australia's future spectrum requirements and welcomes this opportunity to comment on the ACMA's *Five-year Spectrum Outlook 2011-2015* (**Outlook**) as part of the preparation for the publication of the ACMA's Five year Spectrum Outlook 2012-2016.

AMTA has also recently provided submissions to two ACMA consultation papers:

- *900 MHz band – exploring new opportunities* (**900 MHz Review**)
- *Towards 2020 – future spectrum requirements for mobile broadband* (**2020 Review**).

Our comments here are intended to be complementary to those submissions.

The Mobile Telecommunications Industry

The mobile telecommunications industry makes a substantial contribution to the Australian economy. A study by Network Strategies in forecast that the gross productivity benefits of mobile broadband from 2013-2020 would be \$143 billion.¹

AMTA therefore concurs with the ACMA that mobile broadband is an enabling force in Australia's developing digital economy. While mobile broadband is increasingly driving demand for spectrum, it is also a driver of economic productivity.

We are in an environment where the expectations of end-users are rising. This places increasing pressure on the mobile network operators to ensure they have the capacity to meet demand for faster speed and bandwidth-hungry mobile data applications and services.

AMTA believes that to maximise the benefits of mobility in a digital economy we must get spectrum policy settings right.

AMTA believes that there is a need for closer consultation and partnership between industry, Government and the regulator to identify spectrum requirements and develop a spectrum policy roadmap that includes long-term arrangements to meet those requirements.

¹ Network Strategies Report 29028, *The future deployment of mobile broadband services*, 15 June 2010

As a part of that process, AMTA considers the ACMA's Outlook to be a useful outline of the ACMA's work program that also informs both Government and industry about the supply and demand for spectrum resources in the short to medium term.

Priorities for Spectrum Planning – 2012-2016

AMTA considers that the following issues should be considered as priorities by the ACMA in the context of its analysis of future spectrum arrangements for mobile broadband in the period leading up to 2020:

1. Determining Demand for Spectrum

The current analysis of spectrum demand requires a more comprehensive and transparent analysis of baseline demand to support forecasts of future spectrum needs for the mobile sector.

AMTA requests that the initial demand forecasts presented in the ACMA's 2020 Review be followed up by more detailed discussions with industry.

AMTA is planning to conduct its own research to forecast spectrum demand and update its current research and analysis on the contribution made by the mobile industry to Australia's economy. This research is expected to provide a better understanding of how the economic opportunities are linked to the industry's long-term need for additional spectrum. It is AMTA's intention to complete this analysis within the next three months so that the outcomes can be used by the ACMA to inform the next stage of its process of developing Australia's approach to meeting future spectrum requirements for mobile broadband.

AMTA also requests the ACMA release the underlying assumptions for determining the baseline demand for the mobile industry it used for its initial analysis in the 2020 Review.

2. Other Significant Projects and Priorities

AMTA believes that mobile broadband is the key driver of spectrum demand and that in the short to medium term, Australia, along with the rest of the world is facing a looming spectrum crunch.

"Multiple expert sources expect that by 2014, demand for mobile broadband and the spectrum to fuel it, will be 35 times the levels it was in 2009. Cisco has projected a nearly 60X increase between 2009 and 2015. This compares to spectrum coming on line for mobile broadband that represents less than a 3X increase in capacity. The looming spectrum shortage is real..."²

Consequently, in order to ensure that we are able to meet the forecast demand for mobile broadband within the short-to-medium term, AMTA sees the allocation of the Digital Dividend and 2.5 GHz bands – including re-stack processes - as a high priority for the ACMA. Industry requires certainty around processes, timeframes and outcomes of this work to enable investment decisions to be made.

² Julius Genachowski, "The Clock is Ticking" remarks on broadband Wash DC March 16, 2011

AMTA also sees the reissuing and/or reallocation of existing spectrum licences, once Government decisions are announced, as a high priority item for the ACMA. Given that licences start expiring in June 2013 AMTA notes that it will be difficult for operators to make commitments for the 700 MHz and 2.5 GHz auctions while there is uncertainty about spectrum for existing investments.

3. International Harmonisation

In our submission on 900 MHz Review, AMTA proposed that international harmonisation should be one of the objectives of that review and here we maintain that international harmonisation should be an underlying objective in the Outlook's analysis. Consideration of international harmonisation needs to fit within a framework for identifying and prioritising future spectrum releases that is established through ongoing consultation with stakeholders.

AMTA suggests that the Outlook should note the need for the ACMA to actively monitor spectrum and technology harmonisation developments in international forums like the ITU, APT, 3GPP, GSMA, and IEEE and seek to influence outcomes where this is appropriate.

Mobile Broadband - Spectrum Demand

“Effective, efficient and appropriate spectrum management is underpinned by the ACMA’s awareness of spectrum demand.”³

Mobile broadband services, including M2M (machine- to-machine) communications, will drive future global demand for spectrum.

Cisco predicts that by 2015 we will have twice as many network-connected devices as people globally; with over 15 billion active devices including mobiles, tablets, connected appliances and smart machines.⁴

AMTA's members commend the ACMA for undertaking its initial analysis of current and forecast demand for spectrum, including spectrum for mobile broadband, and acknowledging the need to determine how this demand will be met.

However, AMTA suggests that the initial analysis requires a more comprehensive and consultative analysis of baseline demand to support forecasts of future spectrum needs for the mobile sector.

AMTA would appreciate having visibility of the assumptions and modelling and other analyses that support the ACMA's conclusions regarding future spectrum requirements.

As argued in our comments on the 2020 Review, AMTA has concerns that the ACMA's initial analysis has:

- Overestimated currently available spectrum.
- Underestimated future demand. In particular, AMTA questions the ACMA's assertion that demand for spectrum will plateau at some stage (rather, AMTA

³ 5 Year Spectrum Outlook 2011-1015 p 12

⁴ GSMA Mobile Business Briefing, 3 June 2011

considers it more likely that spectral efficiencies will plateau in the future), and AMTA is not aware of any other analyses that come to the same conclusion as the ACMA's regarding demand levels.

- Failed to take into consideration the variations between spectrum availability in metropolitan and regional areas.
- Overestimated the potential improvements that can be achieved from increasing spectral efficiency with LTE. AMTA suggests that the rate of potential improvement in average efficiencies (over a cell coverage area) will be significantly less than the ACMA forecasts (perhaps reaching 3.5 bits/sec/Hz in 2020).
- Overestimated the potential to decrease cell size and increase the number of cells. The ACMA's prediction that the industry can halve cell sizes and quadruple the number of cells is unrealistic considering typical community reactions to new cell towers, physical constraints of the environment and the expected levels of investment in infrastructure.

For the above reasons, AMTA does not believe that the ACMA's assumptions on establishing a baseline for demand for mobile broadband are correct.

AMTA also questions the ACMA's assumption that demand for mobile broadband was met in 2007 and considers that this assumption needs to be investigated further if we are to establish a reliable starting point and baseline.

The ACMA should look more closely at the ITU-R report⁵ in assessing and forecasting future demand for mobile broadband services, noting that parameters in this report can be customised and adjusted to reflect the situation in individual countries like Australia.

AMTA suggests that the ACMA's forecast for mobile broadband is significantly underestimating the future demand for spectrum. AMTA would like to see a more transparent analysis undertaken by the ACMA, working in close consultation with industry. Without a shared understanding of the base level of spectrum demand, it is difficult for industry and the ACMA to progress with the next phase of the planning work.

Commercial decision-making processes must be aligned with government processes and when government processes are not transparent or are delayed this will inevitably lead to less than optimal outcomes where investment in infrastructure is not matched to customer expectations. There is a significant risk that Australian networks will be faced with congestion issues and degradation of service levels that will impact on businesses and consumers if fundamental policy decisions about spectrum availability are not made in a timely fashion by government.

⁵ ITU-R M.2078 Estimated spectrum bandwidth requirements for the future development of IMT-2000 and IMT-Advanced, 2007

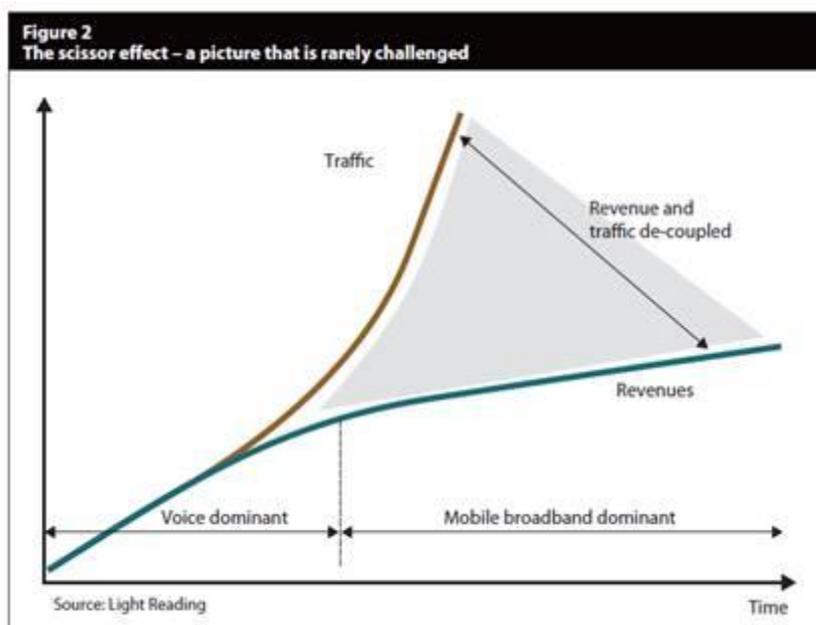
Industry Requires Certainty and Transparency

While it is imperative that the ACMA and the industry plan for the longer term, there are also shorter-term considerations that must be addressed in parallel with planning the longer term strategy.

In the short to medium term, Australia appears to be facing a spectrum crunch. The mobile industry is already facing difficult technology and investment decisions relating to the lack of available spectrum. Industry therefore requires certainty about the processes involved in the upcoming spectrum auctions for the assignment of spectrum in the 700 MHz and 2.5 GHz bands.

There are strong economic reasons for ensuring a timely release of the spectrum in the 700MHz and 2.5GHz bands. A recent study identified \$62 billion worth of cumulative productivity benefits from LTE between 2013 and 2020.⁶ To realise such benefits, industry requires more certainty about the proposed arrangements to allow investment decisions to be planned and implemented.

The economics of the mobile industry is also changing. Demand for data is increasing rapidly but revenue growth rates for mobile telecommunications are slowing (see chart below). This dynamic creates some difficult investment choices for mobile network operators and it is important that these choices are not be compounded by uncertainty about spectrum availability.



Source: Ericsson, "Mobile broadband: busting the myth of the scissor effect", 2010, www.ericsson.com/ericsson/7210_strategy_mobile_broadband.pdf

⁶ Network Strategies Report 29028, *The future deployment of mobile broadband services*, 15 June 2010

AMTA believes that there is value in developing a closer working relationship between the ACMA, the Department of Broadband, Communications and the Digital Economy and other central agencies to develop a coordinated and comprehensive strategy on how Australia will meet future demand for mobile broadband services.

Such an approach will provide greater certainty and transparency for both government and industry.

Strategies for Meeting Mobile Broadband Spectrum Demand

General

Delays in moving a band to its highest value use will have a negative impact on productivity and other outcomes for society. In order to avoid such delays, AMTA strongly believes that industry, the ACMA, the Department of Broadband Communications and the Digital Economy and Government must form a partnership to deliver a spectrum strategy and priorities for an ACMA five year work plan that will meet mobile broadband demand in Australia. The work of this partnership must be transparent and focused on realistic assessment of current spectrum uses and future demands as well as the need to provide certainty for industry's investment planning.

AMTA considers that market forces should be employed as the primary strategy and mechanism used by the ACMA to ensure that spectrum moves to its highest value use (for example, by implementing auctions and facilitating secondary trading).

AMTA acknowledges that there are transitional costs involved in replanning decisions and supports a role for Government in meeting these costs including the use of auction proceeds. The ACMA should consider the potential for creating economic incentives for incumbent users of spectrum to move, especially in situations where there is also revenue from auction proceeds.

Impact of Emerging Technologies

LTE and LTE-Advanced are internationally accepted technologies which in AMTA's opinion are likely to be the most commercially viable of the emerging technologies and provide the greatest benefit over the period leading up to 2020. AMTA considers LTE technology will be well established in Australia by 2015, with LTE-Advanced technology likely to be introduced shortly thereafter.

The deployment of LTE and LTE Advanced systems over the next decade will be a significant step forward in terms of achieving more efficient use of spectrum and meeting customer expectations for the supply of mobile broadband services. It is critical that sufficient spectrum be made available to allow for the roll-out of competitive LTE and LTE Advanced services.

Other emerging technologies are less likely to gain widespread deployment by 2020. For example, cognitive radio is still in the early stages of development and is unlikely to be adopted on a wide scale by 2020.

Demand off-loading technologies, such as Femtocells, have been deployed by some mobile network operators however the impact these emerging technologies will have on meeting future demand is expected to be small.

AMTA also notes that broadcast usage off-loading as used, for example, via Connected TV sets over NBN, that could potentially increase the supply of spectrum for mobile use has not been analysed. A strategic long term analysis, following on from the 2020 Review, would greatly benefit from including all significant and realistic spectrum supply and demand scenarios.

AMTA's view is that emerging technologies are unlikely to reduce the need for new spectrum allocations for mobile broadband, particularly given that many of these technologies will require additional spectrum in order to be deployed and some emerging applications, such as video, require substantially higher bandwidth per end user.

Smart Infrastructure – M2M

AMTA appreciates the benefits of smart infrastructure and understands that M2M is a driver of spectrum demand. AMTA is open to examining more closely the best way of supporting the growth of smart infrastructure in Australia.

While it is probable that some smart infrastructure services may require or benefit from dedicated spectrum, it is more than likely that many others would be cost-effectively supported on existing and future mobile broadband networks.

AMTA therefore questions the viability and economic sense in building dedicated or duplicated infrastructure, along with dedicated spectrum allocations, for these types of services unless there are demonstrated specific or niche requirements which cannot reasonably be replicated on commercial networks.

PPDR Mobile Broadband Requirements

AMTA is of the strong opinion that the requirements of Australia's Emergency Service, Police and National Security Agencies for the purposes of Public Protection and Disaster Recovery (PPDR) can be met within existing and future public mobile broadband infrastructure. That is, commercial arrangements between Emergency Service Organisations and the carriers who operate mobile broadband networks would be the most cost effective method of meeting Australia's requirements for a public safety communications network. Such an arrangement would preclude the need for a separate and specific allocation of a band of spectrum for PPDR.

A report by Access Economics, commissioned by the Attorney-General's department, also concluded that,

“Based upon economic considerations, the optimal outcome for PSAs (Public Safety Agencies), the government, network carriers, and the economy as a whole would be a commercial arrangement, with PSAs negotiating access to a carrier's network.”⁷

If however, a separate public safety network was required by the Australian government then it should use spectrum that has already been identified within the Asia-Pacific region for PPDR. This would potentially allow for economies of scale to be realised in terms of network equipment and handsets. Harmonisation would also allow for interoperability across national borders.

AMTA notes the following international planning in this area:

- The ITU World Radio Conference in 2003 passed a resolution (Resolution 646) which encouraged administrations in the Asia-Pacific region to consider the use of spectrum within the 806-824 MHz and 851-869 MHz segments for advanced PPDR communications. The Asia Pacific Telecommunity (APT - the intergovernmental body that coordinates telecommunications and radiocommunications planning in the Asia Pacific region) is now exploring options for the implementation of PPDR services within these segments.
- Simultaneously the 3GPP international standards body is also considering two options for LTE mobile technology within the same spectrum segments: :
 - 2 x 18 MHz in the segments 806-824 MHz and 851-869 MHz; and
 - 2 x 10 MHz extension of Band 5 to include the segments 814-824 MHz and 859-869 MHz.

Conclusion

AMTA welcomes the opportunity to comment on the Outlook.

AMTA considers the Outlook to be an important integral step in the process of defining a spectrum policy roadmap for Australia.

AMTA strongly recommends that the ACMA consider its suggestion of working in partnership with AMTA through further consultations to develop an agreed baseline of spectrum requirements. In order for Australia to reap the benefits of the digital economy, we must get the spectrum policy settings right. Getting the policy settings right should start with a common view on forecast demand and the methodology for deriving these forecasts.

⁷ Radiofrequency spectrum options for Public Safety Agencies, Report by Access Economics Pty Limited for Attorney-General's Department, 10 Sept 2010

AMTA also recommends that the ACMA does not undertake its analysis in isolation from other parts of government and that it should engage with the Department of Broadband, Communications and the Digital Economy, and other central agencies to develop a coordinated and comprehensive strategy. AMTA believes that Government and industry can work together to determine a mobile broadband strategy roadmap for Australia which will form an important element of this Outlook and the future five year outlooks.

AMTA intends to commission its own research on baseline and forecast demand for mobile broadband and AMTA expects that the outcomes of the analysis will be useful for informing the ACMA in the next stage of its process of developing Australia's approach to meeting future spectrum requirements for mobile broadband.

AMTA also intends to commission research to analyse and quantify the contribution made by the mobile sector to Australia's economic productivity which we hope will also be useful for informing the ACMA's and Government's overall spectrum strategy.

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