



Australian Government

Department of Communications

Spectrum Review

Potential Reform Directions

A Hughes Submission

Consultation Paper
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Proposal 1: Implement a clear and simplified framework of policy accountability

- *Minister to publicly issue over-arching policy statements, against which the ACMA must act consistently.*
- *Minister to have direction powers in the Radiocommunications Act to enable Ministerial intervention for specific purposes such as to reserve spectrum in a plan, allocate or reallocate spectrum.*
- *The ACMA to be required to notify the Minister of certain decisions and provide an annual work program and key priorities over a three-five year timeframe.*

The Minister is already responsible for the Department of Communications and the Australian Communications and Media Authority. Making policies clear and publically available should already be happening.

What precautions are being made to prevent anti-competitive behaviour. The wireless broadband companies already have considerable financial power and are using examples from countries of much higher population densities as justification for use in Australia which with exception of a few cities is not true here.

As an example communications between two “close” locations can be either through a wireless broadband/mobile phone spectrum where the telco makes a profit. An alternative is for the user is to use their own digital two way radio. For the user the first option is cost effective but for frequent use the second is more appropriate. The telcos use a large bandwidth which is shared between users where as the two-way radio uses a narrow bandwidth allocated continuously.

Proposal 2: Establish a single licensing framework

- *Establish a single licensing framework by consolidating the three licence categories (apparatus, class and spectrum) and provide the ACMA with flexibility to set licence parameters, for example, to include band frequency, payment, sharing and trading arrangements.*
- *Tenure of licences to be a parameter, with a maximum term of 15 years to be specified in the legislation.*
- *Renewal of licences to also be a parameter. If the licence provides for a presumption of renewal, the legislation would specify the circumstances under which the ACMA is not required to renew.*

This section has been written by a financial/legal person which ignores the engineering implications

There is no mention of the technical characteristics of the transmissions for example;

- Coverage area of transmissions which relates to;
 - Radiated power
 - The height of the antenna above the surrounding terrain
 - Frequency of transmission
- The 15 year licence tenure may be excessive because of changes in technology.

- An example is the setting of dates for a specific technology to be changed from the old to the new type.
 - As the capacity increases and price of digital processing drops, this enables more efficient error correction to be applied. This is very useful in the presence of interference.
 - In the past FM analog two-way radios were forced to replace all transceivers with half bandwidth. This doubles the number of potential users of that spectrum.

Proposal 3: More flexible allocation and reallocation processes

- *Provide the ACMA with greater flexibility to determine the most appropriate allocation process and method.*
- *The ACMA's annual work program to specify timing of allocation processes and the ACMA to report against these.*
- *Allow the ACMA to reallocate spectrum without the need for a Ministerial determination.*
- *Manage changes of use by setting appropriate licence terms that allow for replanning.*
- *Authorise the ACMA to allocate encumbered spectrum enabling incumbent users to continue operating in the band following reallocation.*
- I assume you mean the function of particular bands which should match the current World RadioCommunications Conference. Each band will have its own carrying capacity depending on the frequency range specified, the technical specifications and the terrain. We do have our own variations.

Proposal 4: Establish a more transparent and flexible approach for spectrum pricing to promote efficient use and re-use of spectrum

- *Prices for spectrum to be market-based, with the ability for Ministerial intervention to determine otherwise on an exception basis.*

Pricing for administrative allocations of spectrum to be reviewed, simplified and made consistent and transparent.

- Is the end result of this policy similar to the sale of real estate. The Government sells crown land (ie spectrum bandwidth) and from then on they are traded in an open market with a market generate price.

The most popular and therefore expensive will be the frequencies used for that application in more populous countries. This is because of equipment cost is less.

- Will the allocation to a user be available for 24 hours or will access be charged on a time x radiated bandwidth basis.

Proposal 5: Structuring payment schedules for licences

- *Provide flexibility in the timing and approach for payment of licence fees.*

Who chases those who have not paid for their spectrum use.

Proposal 6: The ACMA to take an open data approach to substantially improve the range, availability and quality of information provided to support an efficient spectrum market

- *The ACMA to report to the Minister through its annual work program on its efforts to improve and maintain the range, availability and quality of information to support the spectrum market.*
- *Provide the ACMA with authority to collect information from industry relevant to the performance of its functions and exercise of its powers.*
- There is no mention of the parameters required to determine how efficiently the spectrum is being used.
For example;
Average \$/Hz on licence sales which are for 15 years
Average percentage useage on each channel in each band
Some bands will be much more popular than others for example the medium frequency band (around 1 MHz) is useless for mobile phones because of the small size requires a small antenna which is most efficient In the Ultra High Frequency Band (1 GHz).
- **It is important that the numbers and age of the various technical specification be available. As an example no one actually knows what proportion of TV sets are MPEG4 capable considering that it has been common place since 2010.**
 - **The DoC/ACMA has to specify the technical characteristics (which may be an Australian or International standard (ISO)). Importers have to make sure their equipment complies, so they need to add the numbers imported and the date. This will make it possible to say when to change to a newer standard of performance with knowledge of the cost and disruption. Eg. % of equipment less than 7 years old.**
- It is not upto the users to provide the Department statistical information.

Proposal 7: Payment of compensation for resuming all or part of a licence

- *Provide for common compensation provisions for resumption of licences.*
- *Whether compensation is payable in event of resumption to be a licence parameter.*

The information provided in proposal 6 is important to determine the price.

Proposal 8: Facilitate greater user involvement in spectrum management

- *Allow the ACMA to delegate spectrum management functions to other entities.*

Commended

Proposal 9: Develop more principles-based device supply regulation

- *Provide the ACMA with increased flexibility to construct device supply schemes appropriate to specific circumstances.*
- *Increase incentives for users and suppliers to manage risk and resolve interference and disputes in the market.*
- *ACMA to develop and publish guidelines as to its dispute management process.*
- *Minimise to the extent appropriate existing record-keeping and labelling requirements having regard to risk factors.*
- *Reform the definitions relating to supply to oblige all persons in the supply chain to take reasonable steps to ensure that compliant devices are supplied to the Australian market.*

This is like saying that the roads do not require police. It is an abdication of the responsibility of Government to the users who pay good money to be able to communicate reliably.

It also assumes a wide spread knowledge base of how to fix interference problems. This is not there. The ACMA says a suitably qualified technician. They do not specify what the qualification required is. The Endorsed Digital TV installer scheme has been disbanded. Whilst not perfect, at least the installer had to have the spectrum analyser which can identify the problem.

http://acma.gov.au/~media/Licence%20Issue%20and%20Allocation/Advice/pdf/btr_handbook.pdf is the advice in the ACMA website. None of the examples can be seen because they are for analog TV. The same problems in DTV all cause unreliable reception.

The two-way radio technicians need to be required to have the appropriate test equipment because the strength and frequency hence the source of the interference can not be found efficiently. Interference is also commonly caused by sources of electronic noise which is increasing as well as other transmitters on channel and on adjacent channels.

Proposal 10: Improve regulation by extending the suite of enforcement measures available to the ACMA

- *Substitute civil penalties for the existing criminal offences, where appropriate.*
- *Enable the ACMA to impose civil penalties, issue remedial directions and formal warnings for the purposes of managing and controlling interference or a breach of licence conditions.*
- *Apply strict liability provisions and infringement notices to a broader range of offences where appropriate, for example, operation of prohibited devices and interference endangering safety.*
- *Provide the ACMA with powers to issue recalls, interim bans formal warnings and public warnings to manage the supply of non-compliant devices.*

Proposal 11: The ACMA to continually review options for allocating spectrum to alternative / higher value uses and to ensure that barriers to achieving this are reviewed and removed where appropriate

Factors not included

Appropriate technology to **minimise the costs to the end users.**

Broadcasting is the only efficient way to distribute programs from one source to many users. If mobile phone is used for distribution and WiFi each path has a transmitter and a receiver at each end.

“If all of the station’s audience listened via streaming, it is estimated that it would cost the station \$3,700,000 per annum which is highly inefficient when compared with DAB+ at an estimated \$18,000 (1 of 17 services on a DAB+ ensemble).

If we extend this comparison between DAB+ and streaming to the whole Sydney audience listening via streaming (approx 3.1M listeners (cume) the numbers increase significantly:

- 10,600,000 listener hours per day
- = \$25,071,000 per annum

Compared with the cost of DAB+ transmissions at approximately \$900,000 (for 3 ensembles, which includes **all** 52 commercial and national analogue and digital only services).” CRA.

Why should the listener pay the mobile phone company for transmission to them when the broadcaster can deliver the program at a much cheaper price.

Many mobile phones are FM radio capable and international pressure is being applied to the phone manufacturers to include a digital radio receiver in phones.

Some frequency bands need to be reserved for newer technologies.

From the CRA submission¹

“the radio industry requested 21MHz of Band III spectrum and received just 14MHz for regional

digital radio rollout. Until the current allocation of 14MHz of Band III spectrum for digital radio in

regional Australia is planned in detail it is unclear if it will be sufficient for future digitisation of

radio and/or if other spectrum may be needed to supplement this 14MHz allocation in Band III –

for example, L-Band.”

L band was used in Canada but the coverage was so poor it has been shutdown and in Europe services are moving to band III.

For example 45-50, 56 – 70 MHz is now vacated by analog TV. This band is not good for DTV or personal communications. It is however ideal for DRM+ digital radio because it is capable of a much greater coverage area than DAB+ at the same power.

The ACMA has embargoed new uses a range of frequencies in the HF band which is ideal for broadcasting Australia wide including the remote areas using DRM30. The Indian's have almost completely covered their 1,300 million people with DRM30 including HF transmitters.

Some frequency bands do not need to be reserved for newer technologies

The 6th TV channel available nationally. DVBT2 which is not backward compatible with our current DVBT modulation is in current use for all UK HD terrestrial TV and is spreading rapidly including Asia and Africa. MPEG-4 is in widespread use except in North America. These technologies do not need testing. They need a decision from Government for an implementation date and to prevent the importation of non compatible receivers. Set top boxes are available retail for less than \$30.

In 2012 an DBCDE survey² found that 92 % of all TVs are capable of HD reception. This was before the major markets switched off analog TV. Why

¹ http://www.communications.gov.au/data/assets/pdf_file/0020/242714/Commercial_Radio_Australia.pdf

aren't the primary channels (2,3,5,6,7,8 9 & 10) on HD, nearly all programming is being degraded to SD prior to transmission. This does not even require MPEG-4 unless you want to keep News 24, One, 7Mate and GEM.

The Minister is yet to remove the requirement that the primary channel has to be transmitted in SD. 25 times per second the TV signal tells the receiver if the program is in HD or SD.

The Minister has expressed a wish to use MPEG-4 but does not mention that our HD transmissions are a downgraded from the international standard of HD.³ The adoption of MPEG-4 on all programming would allow enough capacity to run Full HD which all medium & large TVs are Full HD. As I write this document, the TV has "Bones" on the screen which was produced in Full HD, downgraded prior to transmission to SD and the TV then has to upscale (inserting a guess of the missing information) back up to Full HD for display. If the upscale did not occur the picture would be much smaller.

Planning for Ultra High Definition (4K). These TVs are being sold now. To transmit these programs on existing TV channels all receivers will have to become DVB-T2 with the standardised at the beginning of this year High Efficiency Video Coding (HEVC). It quarters the data produced by a signal. This requirement is required soon so that by the time programs become available in quantity a switchover can occur without any government support or additional spectrum. This requires Government regulation.

² http://www.communications.gov.au/_data/assets/pdf_file/0011/222788/Digital-Tracker-Quarter-4,-2012-Full-Report-final.pdf Page 27

³ 1920 x 1080 x 25p is degraded to 1440 x 1080 x 25i

Questions for Stakeholders

1. What changes should be made to the proposals outlined in this paper to make them work more effectively?

See above

2. What additional proposals should be considered?

See above

3. What timeframes (short-term and longer-term) should apply to implementation of the reform proposals?

The requirement to make primary TV channels SD can be dropped immediately and MPEG-4 could be commenced within a year provided SBS transmits SBS1 in HD on channel 3 and it is already simulcast on channel 33 in SD.

- 4.

What transitional arrangements should be put in place?

A switchoff of AM and FM decision needs to be made now for 7 years time. This needs to be advertised like the digital TV switchover.

The arrangements used to convert from analog to digital TV should be repeated for radio with the addition of an import ban on analog only radios.

DAB+ as used now and DRM are much more efficient at moving a program between the studio and the listening point.