



Australian Communications and Media Authority

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Thank you for the opportunity to submit my view on the upcoming Expiring Spectrum Licences.

What I'm requesting:

The ACMA implements a framework allowing for the use of spectrum in coverage bands that have traditionally been assigned via spectrum auctions. Specifically, in licensed areas where there are no measurable emissions and no provable intention for the spectrum licensee to deploy mobile infrastructure covering the given area.

I'm strongly in favour of a Use-It-Or-Share-It licensing framework. Throughout this submission I'll outline why I think the ACMA's consideration of this approach is the right choice.

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Glossary

- Coverage spectrum:
RF Spectrum located within traditional coverage bands: LTE / NR Bands 5, 8 and 28, occurring within 703MHz-960MHz.

- Communities:
Small rural towns (~0 - 500 Population) and Indigenous Communities.

- Private Networks:
Cellular networks owned and operated to aid a specific purpose. Eg, Mining, Rail, Cattle Stations.

- Provable Intention:
Indisputable evidence which confirms a carrier has already started mobile deployment and construction in a given area. For example, a letter stating deployment is underway would not be Provable Intention, whereas a photo of construction with GPS coordinates would be Provable Intention.

- UE:
User Equipment, a device that connects to a mobile network. Commonly a mobile phone, but could also indicate mobile broadband hotspot, or IOT specific device.

- PSAP:
Public safety access point, an emergency call / operations centre.

- eNB:
eNodeB, a LTE (4G) cellular base station radio.

- gNB:
gNodeB, a NR (5G) cellular base station radio.

- EPC:
Evolved packet core, software that provides signalling, control and forwards traffic for a 4G network.

- 5GC:
5G Core, software that provides signalling, control and forwards traffic for a 5G network.

- RAN:
Radio Access Network, usually referencing an eNB / gNB(s) or associated tower infrastructure.

Introduction

Rural and remote Australia faces a unique problem. It's one of the least economic areas to deploy mobile infrastructure in, yet requires the greatest coverage footprint to serve those that live here.

Incumbent operators have made considerable efforts to offer mobile coverage across a number of rural communities, but there's a large coverage gap remaining.

More often than not, large operators rely on government grants and taxpayer funds to provide coverage to the communities out here, with their own costs driven up by their very size. It takes longer for a large operator to mobilise teams and coordinate internally, and it often takes more staff to achieve the same result. Given this, the cost of a mobile deployment is likely to be greater when being done by a large operator.

To make matters worse, smaller Australian operators and new entrants to the market are typically locked out due to their inability to acquire coverage spectrum for their own local communities.

The current licensing framework doesn't enable practical competition via smaller operators, and the prices raised at spectrum auctions prohibit small and medium operators from accessing coverage spectrum. This has resulted in the majority of available mobile spectrum being locked to a small number of carriers.

With the prohibitive cost for a larger carrier to rollout mobile infrastructure to a remote area or small community, and the licensing constraints prohibiting a smaller operator from offering services to the area; the net result is often the same: The community goes without mobile coverage at worst, or is limited to a single choice at best.

Despite the majority of available coverage spectrum sitting silent and unused.

This is a problem that can be solved, through a Use It or Lose It, (UIOLI) or Use It or Share It (UIOSI) policy.

Addressing the request for comments

Approaches to examining use under existing spectrum licences

I believe an approach of 'assumed emitting until proven otherwise' would prove the most efficient. Requiring an operator to submit emission proof for each cell site (excluding what's already sent to the AMTA) would increase the workload on both the operator and the ACMA. If a UIOLI or UIOSI approach is taken, the onus of proof of a **lack** of rf emission could be on the prospective licensee (the new operator).

Issues around resilience and temporary disaster responses that arise in the context of spectrum licences and the ESL process

I'm not intimately familiar with the legislation and frameworks regarding emergency use of spectrum in disaster scenarios, so I won't offer any suggestions on this point as far as policy is concerned.

Practically speaking, further coordination with the 3GPP to detail improved UE emergency gateway selection would be beneficial, I believe this is where the industry is headed long-term. Currently, establishment of emergency calling is controlled by the operator in both the eNB/gNB and the EPC/5GC. If an operator or private network doesn't allow emergency calling, the UE will try to connect to another network.

There is room for improvement in the selection process, but if an operator doesn't have a route to a PSAP they can simply not offer emergency calling. The UE will then attempt any other operator who does.

Our views on the uses of the frequency bands that are conducive to promoting the long-term public interest, and any additional evidence or analysis related to these views

I believe that the decision to delegate the spectrum that the ACMA have for mobile usage has had a significantly positive effect on Australia. Due to its uptake, band 28 has transformed from a fringe band to a staple in any APAC based chipset. It's overshadowed only by a few bands (31, 73, 87) in terms of raw coverage ability, and it offers great downlink capacity with its 20 MHz channelling, especially compared to bands 5 and 8.

With NR (5G) deployments slowly increasing in number, the existing coverage bands that the ACMA have licensed will carry over without issue. Some NR bands see significant increases in available bandwidth (5, 8). Any changes to the existing arrangements for bandwidth limit per entity(operator) would

ultimately affect the available capacity either positively or negatively, but so long as the bands are available, the networks can operate.

The effectiveness of rollout obligations to achieve improved coverage, UIOLI and UIOSI conditions to achieve more efficient use of the spectrum, any evidence or analysis to support these views and input on the practical implications of applying such conditions.

Spectrum is a valuable resource, and the existing auctions make use of the free market efficiently to determine the highest price from the largest providers. Not only beneficial to the market, The ACMAs spectrum auctions have been and continue to provide a beneficial source of tax revenue for Australia.

However, the provided framework has given way to an unintended side effect - monopolies. The prices achieved at spectrum auctions far outprice anything that a smaller operator will be able to afford, without a requirement for the winners to actually use the spectrum in the allocated areas.

This allows the purchasers of the coverage spectrum to effectively squat on the spectrum across Australia, killing any opportunity for competition and stopping local operators from offering long-range mobile coverage to their communities.

Take the 700 Mhz digital dividend auction from 2013^[1]:

The least expensive lot achieved at Auction was \$13.5 million, going to TPG.

Then the auction that followed in 2017^[2], the lowest bid being a 5 MHz paired slice for \$285.9 million going to Vodafone.

In 2021, the 900MHz auction^[3] saw the cheapest allocation yielding \$37.5 million for regional Australia, going to Telstra.

These figures are an affordable cost of doing business for large publicly traded operators, but far outside the budget for smaller operators hoping to offer something to their communities.

As a result, the only option for a small operator to enter the market currently is to ask one of the larger operators for use of their licensed spectrum, or simply do nothing and hope that the coverage gap for their community is filled by a federally funded program.

The small pool of holders paired with the large licensed area of coverage make it simple for a large operator to maintain a coverage monopoly by:

- Outright refusing to lease spectrum in unserved areas.
- Offering to lease at prices that are knowingly uneconomical.
- 'Losing' emails, dragging out draft agreements for years or simply not responding.

The end result is the same. The larger operators keep exclusive rights to the spectrum and any new operators who wish to serve the area are not afforded the opportunity.

Use It or Share It

Given the issues that exist today, I'd like to offer the following suggestion:

To have the lowest possibility of a negative price effect on spectrum auctions, keep the majority of the existing spectrum auction framework, but offer a Use It or Share it licensing option.

The mechanics might look as follows:

- Operator **Small** is based in an underserved rural area, and wants to offer mobile services to their community.
- Operator **Big** is a national telecommunications operator, holding a 10MHz spectrum licence for band 28 across Australia.
- Operator **Small** has built local infrastructure and purchased RAN equipment for Band 28.
- Operator **Small** does not hold a licence for band 28, but notes that Operator **Big** doesn't operate in their community, and the nearest tower maintained by Operator **Big** is more than 200km away.
- Operator **Small** uses a calibrated spectrum analyzer with a GPS and takes a measurement showing location and lack of RF emissions in the downlink band licensed to Operator **Big**. The measurement contains at least one reading every hour across a 48 hour period.
- Operator **Small** takes this information and contacts their Accredited Person, requesting a Use It or Share It licence for the 10Mhz of band 28 spectrum licensed to Operator **Big**.
- Operator **Small**'s Accredited Person then lodges the application with the ACMA, after confirming there is no possibility for interference to the nearest tower owned by Operator **Big**.

- The ACMA notifies Operator **Big** of the Use It or Share It application. Allowing them 30 days to respond.
- Operator **Big** Responds to the ACMA, confirming no **Provable Intention** to deploy a mobile network in the community, and no mobile cell is currently broadcasting within 200km of the area on the requested band.
- The ACMA grants Operator **Small** the requested licence for a temporary period of 60 days until proof of broadcast is shown.
- In order to finalise the licence, Operator **Small** turns on the RAN equipment, and sends proof of broadcast with the GPS-enabled, calibrated spectrum analyzer via their Accredited Person.
- The ACMA receives the proof of broadcast, and finalises the licence for Operator **Small**.
- Operator **Small** now pays an annual fee to the ACMA for the covered HCIS area, at the set \$/MHz/Pop tax for the associated band 28 licence.

The 'Share It' component of the licence might function where:

- Operator **Small** has operated in their community for a number of years successfully.
- Operator **Big** has decided to start operation in Operator **Small**'s community, using the band 28 licence that Operator **Small** currently holds.
- Operator **Big** writes to the ACMA via their Accredited Person, requesting a Resumption of Licence, supplying both the requested resumption date (being after 60 days) and **Provable Intention** showing they have begun construction.
- The ACMA notifies Operator **Small** that the former licensee has requested a resumption of licence, along with the resumption date.

- Operator **Small** then has until the resumption date to cease broadcasting on Operator **Big**'s previously held band.
- Operator **Big** completes construction, and provides GPS-enabled proof of broadcast within 60 days to finalise the resumption of licence.

The likely outcomes from the resumption of licence in this scenario would be:

- Operator **Small** would utilise the UIOSI framework to shift to another unused segment in band 28, or
- Using the revenue from the years of operation, Operator **Small** would deploy additional RAN on available bands (ie. Band 3 via Apparatus licensing) to provide equivalent coverage and keep the network operational, or
- Operator **Big** reaches out to Operator **Small**, offering to purchase the subscriber SIM information (IMSI, Ki, etc) and/or mobile infrastructure. Operator **Small** agrees, and notifies the public that they will need to pay Operator **Big** starting from the resumption date.
- Operator **Big** doesn't reach out to Operator **Small**, and Operator **Small** notifies the public that they will be ceasing operation on the resumption date, after deciding not to deploy further infrastructure or utilise the UIOSI framework. Inhabitants of the community then purchase SIMs belonging to Operator **Big** and resume normal usage.

The end result in this scenario is the same; the community is provided with mobile coverage where they had none or fewer options before.

Given the above scenario, I would caution against forcing Operator **Small** to provide Operator **Big** with infrastructure or Subscriber Information in a resumption of licence scenario, as this would likely lend itself to larger operators attempting to 'game' the UIOSI framework, and would likely reduce small operator confidence long-term.

And to ensure equitable distribution, a maximum of 20MHz (1 x 10MHz pair) might perhaps be acquired by one entity via the UIOSI framework for a given HCIS area, using the same framework at PMTS apparatus licensing.

Closing Summary

I'm writing this submission because I believe rural connectivity is a problem that can be solved. The solution can be built and maintained on Australian soil by Australian vendors. Mobile cores are becoming easier to deploy, major-vendor RAN equipment is becoming cheaper and the landscape is gradually opening up from global giants to local operators.

Remote Australia ultimately suffers from a lack of coverage, not capacity. A UIOSI framework will enable smaller, more competitive operators to offer something, where there is currently nothing. We'll likely see an increase in private networks as well, supporting local innovation particularly in the agricultural sector.

All we need is the policy framework to support it.

Thank you for your consideration.

