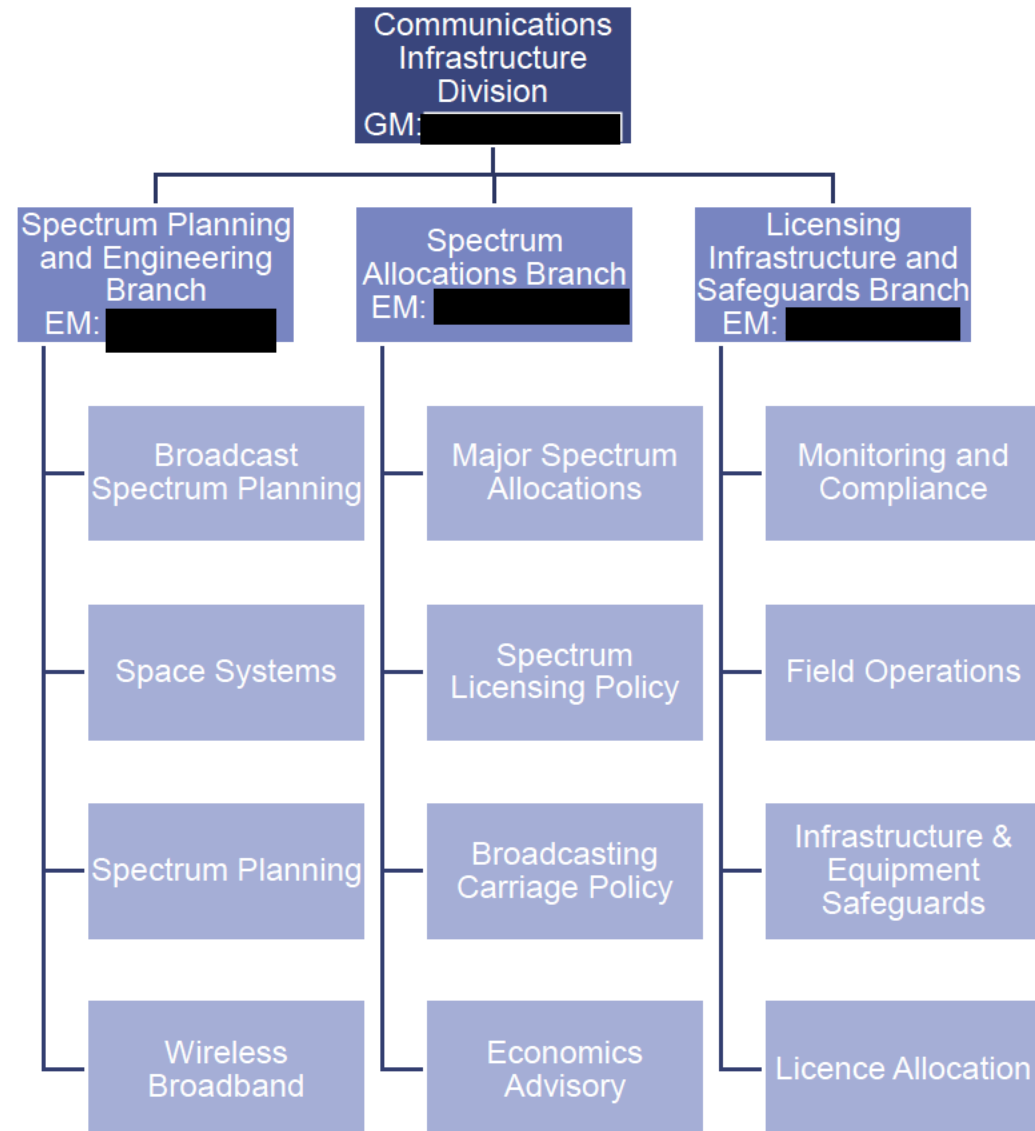


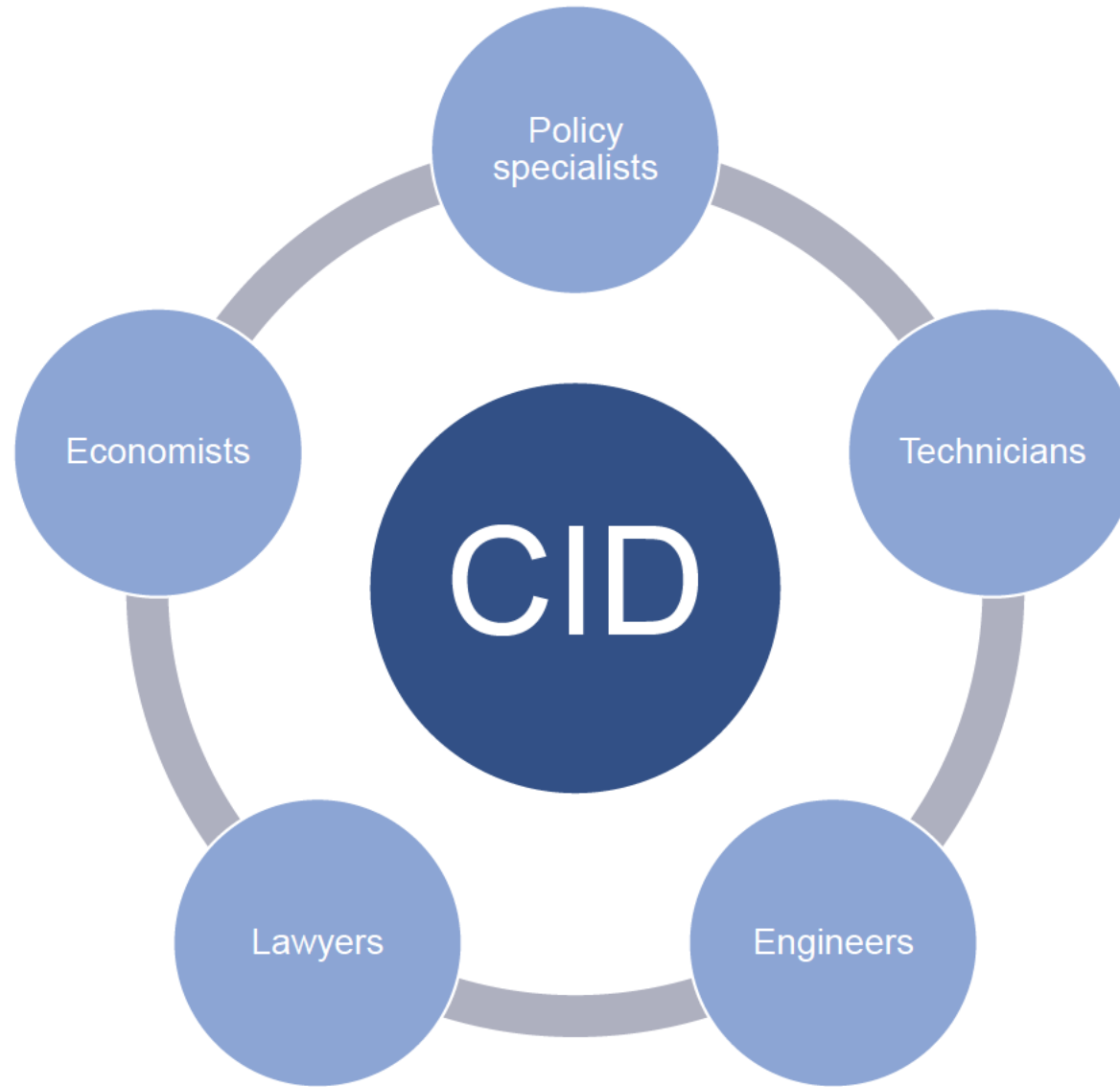
Communications Infrastructure Division

 General Manager

Who we are



Who we are



What we do

The Communications Infrastructure Division (CID) manages the planning, availability and use of radiofrequency spectrum – the ‘supply chain’ of spectrum and telecommunications infrastructure.

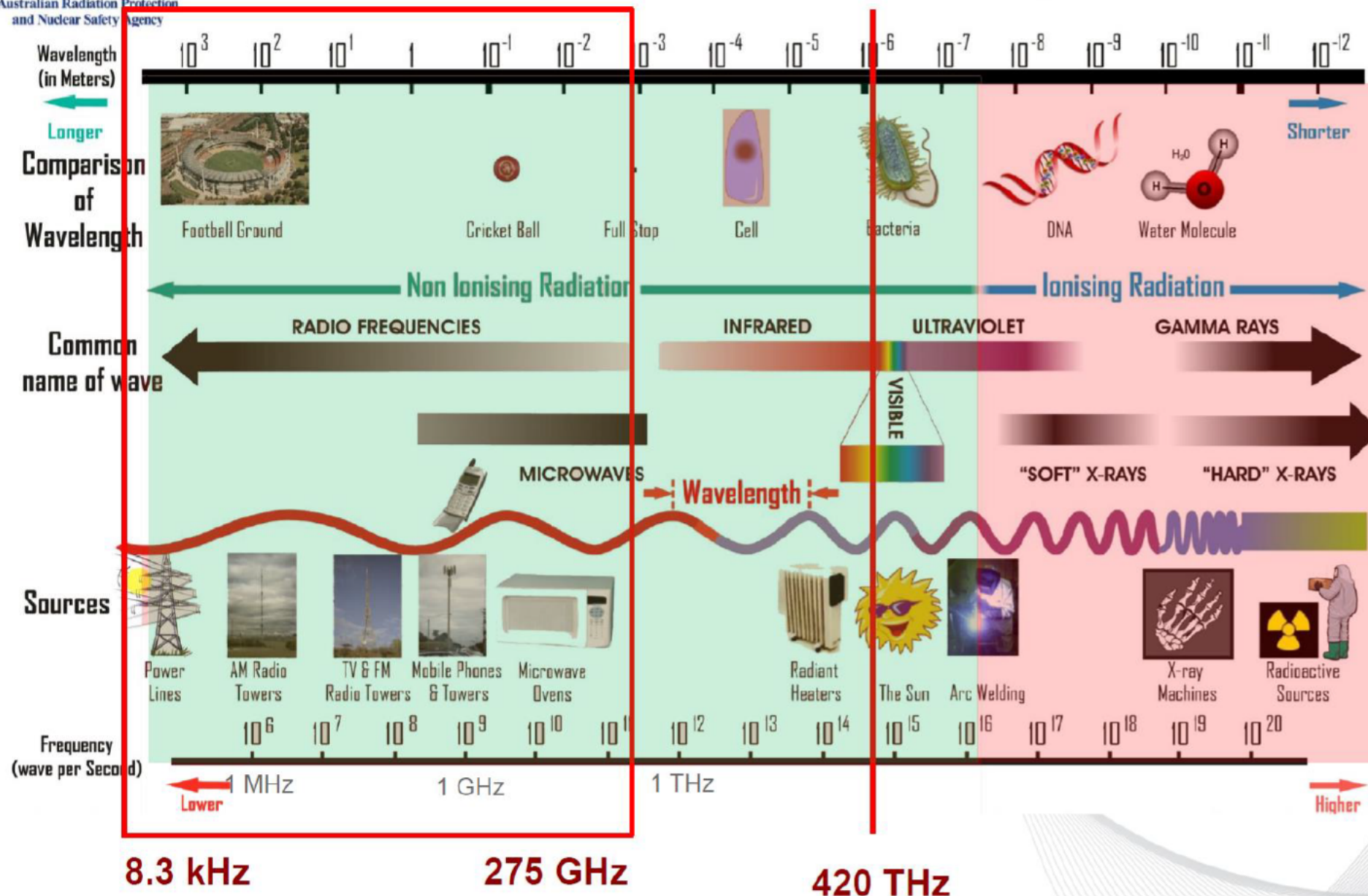
Spectrum supply chain





Australian Government
Australian Radiation Protection
and Nuclear Safety Agency

THE ELECTROMAGNETIC SPECTRUM



Spectrum Illustrated

A guide to major spectrum allocations in Australia

© Copyright Commonwealth of Australia 2010
The Australian Government and its agencies are registered
instruments owned by Broadcast SIG, Inc.

The spectrum is a continuous range of electromagnetic radiation extending from the longest radio waves through infra-red, visible light, ultra-violet and X-rays to gamma-rays.

The radiofrequency spectrum is that part of the total spectrum which is used for transmitting radio waves. The radiofrequency spectrum is a natural resource that is used but not consumed. It is used by being occupied by a radio communications device and the efficiency of its use depends on coordination among users in order to minimise interference to each other.

The use of the radiofrequency spectrum has been, and will continue to be, a key economic, social and cultural enabler for the development of Australia.

The radiofrequency spectrum is divided into several broad frequency bands as follows:

VLF	Very Low Frequency	3-30 kHz
LF	Low Frequency	30-300 kHz
MF	Medium Frequency	300-3000 kHz
HF	High Frequency	3-30 MHz
VHF	Very High Frequency	30-300 MHz
UHF	Ultra High Frequency	300-3000 MHz
SHF	Super-High Frequency	3-30 GHz
EHF	Extremely-High Frequency	30-300 GHz

Each of these bands is divided into sub-bands which are allocated to particular services such as land mobile radio, broadcasting, aeronautical, maritime or space services.

Most sub-bands are allocated to more than one service. Illustrated on this chart are the major allocations and high profile uses for each band. Not all allocations are shown. For more details of frequency allocations reference should be made to the Australian Radiofrequency Spectrum Plan available from the ACMA website (www.acma.gov.au).

Radio waves can be described by either frequency or wavelength. Frequency and wavelength are related by the speed of light; as the frequency increases, wavelength decreases. The wavelength of a radio wave affects the physical size of antennas needed to transmit and receive it. Longer wavelengths require larger antennas than shorter ones. The approximate wavelength at each broad frequency band edge is shown on the chart. This is

accompanied by a visual representation of the change in wavelength as frequency increases (note this does not correspond to the true wavelength).

Longer wavelength radio waves can also propagate further before becoming too weak for reception than radio waves with shorter wavelengths.

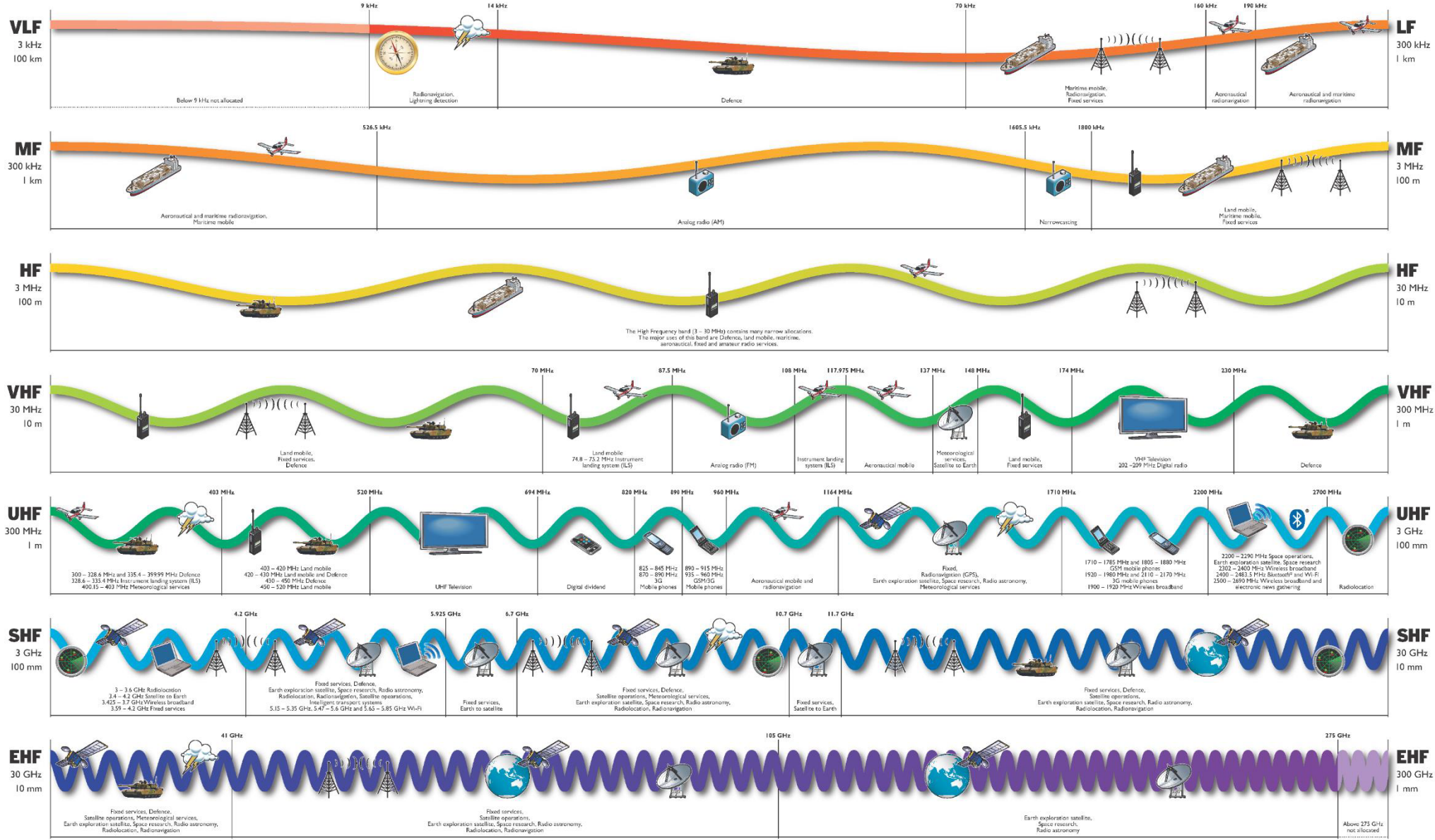
The interplay between frequency, wavelength, antenna size and propagation range results in certain services favouring certain frequency bands. For example, personal mobile communication services such as mobile phones or PDAs favour frequencies in the range of about 500 MHz to 3 GHz as this gives a good balance of propagation range with antenna sizes that can easily be built into a handheld or pocket sized device.



Australian Government



The Australian Communications and Media Authority (ACMA) is responsible for the regulation of broadcasting, the internet, radiocommunications and telecommunications.



Spectrum Management 'Headline Numbers'

Economic value of spectrum in Australia: **\$177 billion** over a 15 year period¹

- > Mobile Broadband: 'productivity impact of mobile will be equivalent to **\$2500 for every Australian by 2023**. This amounts to a total of **\$65 billion of additional GDP by 2023**, or a **3.1% increase in GDP**.'²
- > WiFi: **\$34.7 billion in economic value today, \$41.7 billion by 2025 (USD)**³
- > Land mobile: **\$1.99-3.72 billion**⁴ per annum

Number of licensees: Apparatus – **26,000+** ; Spectrum – **24 (approx.)**

Radiocommunications licences – 2019/2020⁵ : **13 208 issued, 153 933 renewed**

Apparatus licence taxes - 2019/2020⁵ : **\$149.6 million**

Spectrum licence spectrum access charges:

- > expiring spectrum licence - **\$3.2 billion (approx)**
- > spectrum auction since digital dividend - **\$7.5 billion (approx)**

¹ The economic value of spectrum' – Research report prepared for the Department of Communications by the Centre for International Economics, January 2015.

² Deloitte Economic, AMT/CA Submission to Inquiry into 5G 2019

³ Global Economic Value of WiFi (2021-2025)

⁴ Valuing mission critical radio services" A study of the economic value of land mobile radio spectrum in Australia, Windsor Place Consulting for ARCIA

⁵ ACMA Annual Report 2019-2020.

Who we work with

External stakeholders: broadcasters, telecommunications providers, satellite companies, amateur radio operators

Government stakeholders: Department of Infrastructure, Transport, Regional Development and Communications, Department of Defence, Department of Home Affairs, ACCC, Australian Space Agency, ARPANSA

International stakeholders: International Telecommunications Union (ITU), Asia-Pacific Telecommunity (APT), other regulatory agencies

What we are working on

- Five Year Spectrum Outlook - our work program
- Preparations for allocation of the 3.4-4.0 GHz bands – for a wide range of uses, including 5G
- Spectrum for WiFi – 6 GHz band
- Broadcast planning issues – technology upgrade paths
 - TV spectrum aspects of the Government's media reform green paper
 - radio, converting AM to FM and digital radio
- Equipment rules
- 5G and EME compliance priority – measuring emissions to provide assurance to the community about compliance and health and safety

Thank you