



## **Australian Government**

Australian Government response to the  
House of Representatives Standing Committee on  
Communications and the Arts:

‘The Next Gen Future’

Inquiry into the deployment, adoption and application  
of 5G in Australia

November 2020

The Australian Government welcomes the recommendations outlined in *The Next Gen Future* report and thanks the Committee for its work.

Digital connectivity is a key enabler of Australia's social and economic activity. The mobile and fixed telecommunications networks that provide this connectivity are critical to our lives. The fifth generation of mobile technology, or 5G, represents a step change in mobile communications, with a number of advances on 4G.

The Government has been actively supporting 5G, recognising its potential to support new and improved applications for consumer, industrial and enterprise uses. In October 2017, we released Australia's 5G Strategy outlining actions to support the roll out of 5G. Since then we have been making strong progress against the actions outlined in the strategy creating an enabling environment for carriers to establish 5G networks.

The Government is further supporting 5G now that it has reached a level of maturity that enables more advanced use cases to be demonstrated. Through the Australian 5G Innovation Initiative announced in the 2022-21 Budget, the Government is investing in demonstrating the benefits of 5G to businesses through funding practical trials and testbeds of 5G technology. These trials will also showcase the benefits of the technology more widely to all Australians.

Competition is the foundation of Australia's 5G Strategy. Competition in Australia's mobile market has been highly successful in delivering investment in infrastructure across metropolitan and regional Australia, strong consumer take-up of mobile services, and positive consumer outcomes on pricing and inclusions. The GSMA has assessed Australia as having some of the world's best mobile services.

The Committee's report provides a timely insight into the opportunities 5G can bring to the Australian economy from improvements in productivity, new use cases for the Internet of Things and smart cities, regions, and industries. The recommendations touch on the work of a diverse range of portfolios including Education, Industry and Health, in addition to Communications.

The Government thanks the Committee for its thorough review and the Government notes that it is considering the important matters raised as part of its future policy development. As noted by the Committee, several of the recommendations are the responsibility of the telecommunications industry and the Government will continue to work in partnership with industry to make sure that the benefits of 5G are realised in a timely manner.

Specific responses to the recommendations of the Committee are below.

### **Recommendation 1**

The Committee recommends that spectrum allocation be finalised expeditiously and that the Australian Communications and Media Authority, in conjunction with the Department of Communications and Australian Competition and Consumer Commission, investigate how future spectrum auctions can promote improved market competition for the benefit of consumers.

The Australian Government **supports** this recommendation.

The Australian Communications and Media Authority (ACMA) has an ambitious forward work plan for 5G-relevant spectrum allocations in support of the Australian Government's communications policy objectives to support the deployment of 5G technologies. This includes the planned auctions in the 26 GHz and 850/900 MHz bands, and the optimisation of the 3.4 GHz band. Government decisions are informed by comprehensive advice from ACMA and the Australian Competition and Consumer Commission on each allocation and accompanied by extensive consultation with industry and the public.

The Australian Government is committed to delivering spectrum reform that will provide tangible improvements in spectrum management and a more efficient regulatory framework.

In October 2019, the Government committed to a staged approach to amend the *Radiocommunications Act 1992*. The Government will progress targeted amendments to the legislation that are designed to achieve benefits for industry and spectrum users.

The *Radiocommunications Legislation Amendment (Reform and Modernisation) Bill 2020* was introduced to the House of Representative on 27 August 2020. The Bill provides for:

- extension of spectrum licence terms to a maximum of 20 years, with clearer licence renewal processes and improved investment certainty;
- removal of unnecessary constraints in spectrum allocation and reallocation processes;
- the greater alignment of arrangements for apparatus licences and spectrum licences;
- clarification of the roles and responsibilities of the Minister for Communications and the ACMA in policy setting, spectrum management and regulation; and
- improved technical regulation, streamlined device supply schemes and to introduce graduated enforcement mechanisms for breaches of the Act.

As part of the 2020-21 Budget, the Government announced the investment of \$7.2 million in systems to promote the efficient allocation of spectrum. This includes:

- designing and implementing a modern auction capability to allocate spectrum bands for 5G services and beyond; and
- updating and simplifying digital spectrum licence system to provide SMEs with simple, clear and fast ways to access the spectrum and licences through an efficient digital licensing system.

## **Recommendation 2**

The Committee recommends that the Australian Government facilitate discussions between carriers, network operators and utility and infrastructure owners for managing redundant and/or ageing telecommunications equipment.

The Australian Government **supports** this recommendation.

The Government is progressing discussions with industry about how to address this issue. One option under consideration is to amend the *Telecommunications Code of Practice 2018* to include a requirement for carriers to remove redundant equipment from assets owned by utilities and infrastructure owners.

The former Department of Communications and the Arts established the Powers and Immunities Reference Group in 2018 to bring together peak level bodies (representing carriers, utilities, local government and commercial building owners) to identify and work through improvements to the operation of Commonwealth laws that assist carriers to deploy their networks. An action item undertaken by the Powers and Immunities Reference Group is to complete a stocktake of equipment located on their respective infrastructure to help understand the extent of the problem. The equipment stocktake will assist in identifying equipment that is redundant, as well as updating ownership information for legacy equipment that may still be in operation.

It is important to note that where the equipment is owned by a telecommunications carrier, infrastructure owners will need to engage with the carrier about the removal of the equipment. This is because section 474.6 of the *Criminal Code Act 1995* provides that it is an offence for a person who tampers or interferes with a facility owned or operated by carriers, carriage service providers, and nominated carriers.

### **Recommendation 3**

The Committee recommends that the Australian Government commence a review of the low impact facilities framework to ensure that its powers to encourage co-location of facilities and equipment are fit-for-purpose in a 5G environment. As part of this process, the Australian Government should begin reviewing carrier arrangements for 5G infrastructure sharing.

The Australian Government **supports** this recommendation.

The Australian Government's 5G Strategy proposes actions to streamline arrangements to allow mobile carriers to deploy infrastructure more quickly and review existing telecommunications regulatory arrangements to ensure they are fit for purpose.

The Government is reviewing the powers and immunities framework to update and reform arrangements that will assist mobile carriers deploy 5G equipment, specified as low-impact facilities, while making sure that arrangements continue to balance the interests of communities.

The nature of 5G will require carriers to deploy networks with a larger number of smaller cells, which means an increased amount of infrastructure is needed to provide services to consumers. The Department of Infrastructure, Transport, Regional Development and Communications (the Department) is working with carriers to understand how 5G technology is likely to evolve, for example, whether transmitters are likely to get smaller, and the implications this will have for co-location of equipment on infrastructure.

#### **Recommendation 4**

The Committee recommends that the Department of Communications and the Arts assess the suitability of current powers and immunities arrangements, especially in relation to the timeframes for raising objections, noting the likelihood of an increased number of installations for the deployment of 5G.

The Australian Government **notes** this recommendation.

The Powers and Immunities Reference Group recommended to the Department that more detailed information needs to be provided to landowners and occupiers by carriers as part of the notification process to help them understand their right to object to proposed activities, and the timeframes that those objections need to be made by, in the current powers and immunities framework.

The Department is developing fact sheets to be made available setting out the obligations of carriers in undertaking proposed activities and the rights of landowners and occupiers in relation to those proposed activities. The fact sheets are being developed for different audiences such as local councils, utilities and infrastructure owners, and the community.

The Department will continue to engage with stakeholders on the powers and immunities framework through existing mechanisms such as the Powers and Immunities Reference Group.

### **Recommendation 5**

The Committee recommends that carriers work with state and territory road and transport infrastructure managers to ensure that safety standards are maintained.

The Australian Government **supports in principle** this recommendation.

The Government acknowledges that the actions of this recommendation are a matter for carriers and state and territory road and transport infrastructure managers in the context of workplace health and safety legislation in each state and territory and common law.

The Government notes that road authorities are members of the Powers and Immunities Reference Group and have raised safety as an issue for consideration in the context of reforms to the powers and immunities framework.

The Government notes there are existing provisions in the powers and immunities framework requiring carriers to ensure installations:

- comply with good engineering practice along with any standard that relates to the activity;
- are recognised by the ACMA as a standard for use in that industry; and
- are likely to reduce a risk to the safety of a person if the carrier complies with the standard.

There is an option available for road authorities to have existing technical or administrative guidelines about telecommunications installations in road reserves to be recognised as an industry code or standard by ACMA.

## **Recommendation 6**

The Committee recommends that carriers consider multiuser infrastructure sharing to ensure that rural and regional consumers benefit from 5G services in a timely manner, and ensure adequate coverage across all 5G spectrum bands.

The Australian Government **supports in principle** this recommendation.

While the Government acknowledges that the actions of this recommendation are a matter for carriers it notes that there are mechanisms in the regulatory framework to encourage telecommunications carriers to share infrastructure. The framework provides carriers with statutory rights of access to other carriers' towers, and the sites on which those towers are located, subject to the technical feasibility of co-location.

Co-location is the standard industry model for infrastructure sharing in Australia. Typically it occurs on a site-by-site basis with co-location decisions being made based on the circumstances of individual locations. The Mobile Black Spot Program has promoted competition and efficiency outcomes by encouraging mobile network operators to co-locate on base stations funded by the Australian Government. This has included providing other mobile network operators with the opportunity to participate in the pre-design stage on base stations where they wanted to co-locate, agreed minimum technical specifications for co-location, subsidised backhaul, an independent dispute resolution process and requiring co-location to be offered where technically feasible. To date approximately 28 per cent of Round 1 to 4 funded base stations offer co-location or are co-locating on existing infrastructure.

Internationally, there has been a move to more advanced infrastructure sharing models to deliver mobile services in non-commercial areas. Draft guidelines for Round 5A, developed following consideration of feedback from industry and the community, were recently released for consultation, and include measures to incentivise applications that use sharing models to support the provision of mobile services by more than one operator.

Additionally, while it is still early in the rollout of 5G, carriers have already begun to deploy 5G in some regional centres. This has provided some regional customers with access to 5G. It is a commercial decision for the carriers to decide how they progress their respective 5G rollouts, including both installation of 5G network infrastructure and the management of their spectrum assets. It is noted that carriers have upgraded their mobile networks to adopt progressive generations of mobile technology on a national basis.

The Government also acknowledges the role of the Australian Mobile Telecommunications Association's Mobile Carriers Forum (MCF). The MCF facilitates co-location as well as sharing of information around deployment planning and community consultation. Industry has identified that there are economic incentives that encourage co-location of facilities and equipment. Industry has also acknowledge that there are also economic incentives for active sharing of infrastructure and consider that it is likely that carriers will pursue their own commercial arrangements where this is feasible.



### **Recommendation 7**

The Committee recommends that carriers ensure rollout trials are conducted in regional and remote areas, and the Committee notes proposals for large scale trial with one of Australia's most innovative farming regions.

The Australian Government **supports** this recommendation.

The Government acknowledges that the actions of this recommendation are a matter for carriers, but recognises that there is an opportunity to support innovative farming practices with 5G. Recognising the benefits of 5G for regional communities and businesses, the Australian 5G Innovation Initiative is expected to fund the testing and trialling of 5G use cases in regional Australia, including agriculture (subject to an open and competitive grants process).

The telecommunications industry has noted that agriculture is a sector where there could be significant benefits from 5G. The industry has noted that members are collaborating with the agricultural sector in relation to innovative applications of 5G that promise to increase efficiency and yield.

The Government recognises the efforts of the carriers to test and trial 5G across Australia including their efforts in regional areas. The development of trials for 5G use cases, including agricultural use cases, by the telecommunications carriers will be a commercial decision for carriers. All three of Australia's major telecommunications carriers have noted the potential for 5G to facilitate innovative use cases in regional and farming communities. In 2018, Telstra announced a partnership with the National Farmers' Federation (NFF), along with other state-level peak agricultural groups, to explore the potential for 5G. In 2020, Optus announced a partnership with Curtin University to uncover the benefits of new use cases for West Australian industries in the mining, oil and gas, agriculture and health sectors. TPG Telecom (formerly Vodafone), has acknowledged the potential benefits of 5G in supporting IoT applications in agricultural processes.

### **Recommendation 8**

The Committee recommends that the Australian Government investigate ways to encourage the manufacture of 5G infrastructure within Australia.

This may be done initially via the Department of Industry, Science and Technology working with Australian telecommunications and related industry partners to examine how Australia could actively participate in the manufacture of components and equipment for use in the rollout of 5G networks - and that manufacturing partnerships be considered with Canada, New Zealand, United Kingdom and United States.

To help enable this, the Australian Government should establish a 5G R&D Innovation Fund to fast track the development and scale-up of alternative manufacturing approaches to reduce the duopoly dependency on 5G related equipment.

The Australian Government **notes** this recommendation.

The Department of Industry, Science, Energy and Resources has consulted with the Australian mobile telecommunications industry. Australian mobile carriers have existing commercial arrangements with established manufacturers for the supply of 5G components and equipment for their 5G rollouts, and Australian manufacturing of this equipment is not a priority for their rollouts. However, local industry partners are collaborating with network equipment vendors to contribute significantly to the 5G rollout in areas such as civil works site construction, assembly, integration and tuning of network equipment.

The Australian Government will continue to support Australian research, development and manufacture of technologies that complement 5G such as automated vehicle systems and advanced sensors. The Government will also encourage Australian research and development into future generations of mobile communications technologies that are expected to follow 5G.

On 1 October 2020, the Government announced the \$1.5 billion Modern Manufacturing Strategy (the Strategy) to harness Australia's manufacturing capability to increase competitiveness, build scale and enhance our future resilience. The Strategy contains a number of significant measures designed to support transformative investments in technologies and processes by manufacturers.

This builds on the Government's commitment to supporting our manufacturing industries to grow, create jobs and to become globally competitive through the first round of the Manufacturing Modernisation Fund, the \$100 million Advanced Manufacturing Fund, the Advanced Manufacturing Growth Centre, the Research and Development Tax Incentive, Entrepreneurs' Programme, and higher education research funding and industry-research collaboration via the Cooperative Research Centres Programme.

### **Recommendation 9**

The Committee recommends that the Australian Government conduct a review of current legislative arrangements enforcing network and data security for the supply of 5G equipment. Further, as part of this framework, it must be incumbent on vendors to enforce Cyber Supply Chain Risk Management throughout procurement, roll out and maintenance of the 5G network.

The Australian Government **notes** the Committee's recommendation.

Telecommunications carriers generally operate their networks on a commercial basis. Telecommunications companies are responsible for managing their supply chains.

However, there are security obligations on telecommunications carriers in the *Telecommunications Act 1997*, which go to telecommunications supply chains. These provisions include:

- a security obligation, which requires carriers and carriage service providers to do their best to protect telecommunications networks and facilities from threats to national security;
- a notification requirement, which requires carriers and nominated carriage service providers to tell the Government about any proposed changes to their telecommunications systems or services that the carrier or provider considers is likely to have a material adverse effect on their capacity to comply with their security obligation;
- the ability for the Government to obtain information from carriers and carriage service providers in certain circumstances to assess compliance with their security obligations; and
- the ability to intervene and issue directions to carriers and carriage service providers in cases where the Minister for Home Affairs consider there are significant national security concerns that cannot be addressed through other means.

The Parliamentary Joint Committee on Intelligence and Security is already required to undertake a review of these provisions, commencing in September 2020, and concluding by September 2021.

Additionally, on 6 August 2020 the Government released the 2020 Cyber Security Strategy which establishes a Best Practice Regulation Taskforce to work with business to consider options for better protecting customers by ensuring cyber security is built into digital products, services and supply chains.

On 12 August 2020 the Government announced a consultation process on a package of reforms to strengthen the security and resilience of Australia's critical infrastructure, the communications sector has been identified as a sector likely to be affected by these reforms.

## **Recommendation 10**

The Committee recommends that ARPANSA implement a suitable mechanism to consult with members of the community regarding the safe levels of electromagnetic radiation.

The Australian Government **notes** this recommendation.

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) provides expert advice on radiation protection and nuclear safety matters to the Australian Government. ARPANSA also publishes the *Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields - 3 kHz to 300 GHz* ('ARPANSA Standard') which sets limits for EME exposure and the standard is not limited to communications equipment.

As the Committee has found, 5G network facilities generate low levels of EME in the same way as existing 3G and 4G telecommunications networks. While 5G networks and devices are new, the radio waves used to deliver existing networks will also be used for 5G. These waves, including the higher frequency waves, have been extensively researched and are not hazardous to human health.

Under the Enhanced EME Program, which was announced on 16 December 2019 by the Hon Paul Fletcher MP, Minister for Communications, Cyber Safety and the Arts, and Senator the Hon Richard Colbeck, Minister for Aged Care and Senior Australians, responsibility for broad delivery of public information about the safety of electromagnetic energy/radiation from telecommunications facilities transferred from ARPANSA to the Department of Infrastructure, Transport, Regional Development and Communications.

ARPANSA's role (under the Program) focuses on research and measurement studies through consultation with radiation protection experts and international engagement. ARPANSA has also received \$2 million in funding to upgrade its EME laboratory to enable measurement and calibration of testing instruments and research on technologies that will operate at higher frequencies such as 5G devices. ARPANSA will continue to provide information to the public on radiation protection through its existing communications platforms, which include its website and Talk-to-a-scientist program.

A revision of the ARPANSA Radiofrequency Standard is underway, based on revised international guidance, and public consultation on a revised draft commenced in August 2020. ARPANSA has engaged international partners, such as the World Health Organization to fund assessments on the state of EME research.

The Department of Infrastructure, Transport, Regional Development and Communications has taken on the broader role of providing clear and accessible information to all members of the public. This work has already commenced with updated and easier to find information on the Department's website.

### **Recommendation 11**

The committee, welcoming the Australian Government's decision to establish a new community information campaign on 5G, recommends that the Government work closely with the ACMA to develop an integrated and comprehensive campaign that can respond to concerns raised about the new network.

The Australian Government **supports** this recommendation.

As part of the Enhanced EME Program, the public information campaign, funded to \$1.8m over four years, will incorporate information about 5G, but will also aim to improve public understanding of wireless communications and the regulatory framework that applies to all networks. The Communications portfolio has carriage of this task and the Department of Infrastructure, Transport, Regional Development and Communications is working with relevant agencies, including ACMA, to design and deliver clearer information for the public.

## **Recommendation 12**

The Committee recommends the Department of Communications and Department of Education and Training, review how current ICT curricula for roles in 5G related industries in TAFE, accredited training providers and tertiary institutions should be modified to ensure graduates are industry-ready.

The Australian Government **notes** this recommendation.

### *Review of Telecommunications Qualifications*

The Australian Government has recognised the need to prioritise skills in the Information and Communications Technology (ICT) industry, including in relation to 5G. The relevant Certificate II, Certificate III and Certificate IV in Telecommunications qualifications were revised in August 2019 to meet industry's current and future skills needs with fit-for-purpose training products for the ICT industry (refer [Attachment A](#)). As part of that review, the rollout of 5G technology was considered in detail.

In June 2020, the Information and Communications Technology Training Package was further updated. This update had an IT focus and was designed to enable reskilling and upskilling into a range of roles in the ICT sector, such as data analysts, cloud computing developers, network engineers and network security specialists, and to ensure that graduates are job ready. These skills will support 5G related industries.

Currently, the Diploma, Advanced Diploma, Graduate Diploma, and Graduate Certificate in Telecommunications are under review and 5G technology will be considered by the ICT Industry Reference Committee as it updates those qualifications. This review is expected to be complete by December 2020.

The review of these ICT training qualifications is undertaken through an established, industry-led process for the regular assessment, review and revision of vocational education and training (VET) qualifications. The governance of this review process is set out below.

### *Governance*

The COAG Industry and Skills Committee established the Australian Industry and Skills Committee (AISC) to approve nationally recognised VET training packages for implementation and to provide industry advice to Commonwealth, State and Territory governments.

The AISC is supported in this role by its network of 66 Industry Reference Committees (IRCs) made up of industry experts who are best placed to know the skill standards needed in the workplace. IRCs are supported in undertaking national consultation and technical writing of training package updates by six professional Skills Service Organisations that are funded by the Commonwealth.

Adjustments to qualifications are also informed by Industry Skills Forecasts. Industry Skills Forecasts bring together key economic and occupation data with industry intelligence to build an evidence base about the need for training package updates. The AISC approves training package development projects for funding on the basis of this evidence.

### *ICT Curricula*

While the Government notes the Committee's recommendation to review ICT curricula, it is the responsibility of training providers in the VET sector to develop teaching strategies and assessment methods that will see students achieve the expected outcomes of a qualification. This ensures that the delivery of training is both nationally consistent and best able to meet the local needs, abilities and circumstances of students and industry.

Universities are autonomous bodies responsible for course design and curriculum and as such, the Government has no direct involvement in the development of curriculum for specific courses delivered through tertiary institutions. These institutions are regulated by the Tertiary Education Quality and Standards Agency, which is the independent national quality assurance and regulatory agency for tertiary education.

### **Recommendation 13**

The Committee recommends the Australian Government lift apprenticeships in the ICT sector apprenticeships to assist with the rollout of 5G in Australia.

The Australian Government **notes** this recommendation.

The Government provides a range of financial incentives under the Australian Apprenticeships Incentives Program (AAIP) aimed at encouraging employers to take on Australian Apprentices, including in the areas of telecommunications and related trades. These incentives include:

- standard incentives available at commencement and at completion;
- incentives for specific target groups such as mature age workers and adult apprentices, and school-based apprentices; and
- incentives and capped wage subsidies for employers of apprentices in rural and regional locations in areas of national skills needs, under the Rural and Regional Skills Shortage Incentive and Australian Apprentice Wage Subsidy trial.

On 4 October 2020, the Australian Government announced the \$1.2 billion Boosting Apprenticeship Commencements wage subsidy for employers of any size or industry. This assistance will support up to 100,000 new apprenticeships across Australia and is in addition to the \$2.8 billion Supporting Apprentices and Trainees wage subsidy which is helping small and medium businesses to keep their apprentices and trainees in work and training.



#### **Recommendation 14**

The Committee recommends that the Australian Government work with carriers to develop campaigns to boost industry awareness about the advantages of 5G to businesses to help realise the benefits of this new network quickly. This campaign should include elements to lift 5G awareness within local government.

The Australian Government **supports** this recommendation.

The Government has been working with carriers to realise the benefits of 5G across a range of industry sectors. Since 2018 the Commonwealth has led a 5G Working Group that brings together representatives from across the telecommunication industry and Government to raise awareness of 5G. Additionally, the 5G Working Group seeks to identify enablers and barriers to the take-up of 5G in Australia.

The promotion of particular technology more broadly is the responsibility of carriers. Competition is the foundation of Australia's 5G Strategy. Competition in Australia's mobile market has been highly successful in delivering investment in infrastructure across both metropolitan and regional Australia, strong consumer take-up of mobile services and positive consumer outcomes on pricing and inclusions. The Government is committed to enabling strong competition and minimal regulation in the telecommunications sector to deliver the effective deployment and use of 5G.

However the Government recognises the importance of raising awareness of the benefits of 5G across government and industry. The Australian 5G Innovation Initiative has been established by the Government to foster 5G innovation and highlight the benefits of 5G to Australians and businesses in Australia. 5G's productivity benefits come principally from its ability to support new applications. Increasing awareness of the technology's ability to support new use cases will help demonstrate the benefits of 5G.

Additionally, carriers are actively raising awareness of 5G in a number of ways. Carriers have also partnered directly with industry to develop applications of the technology. Telstra and Ericsson, for example, have announced plans to collaborate with Commonwealth Bank of Australia to explore the potential of 5G edge computing technologies for the financial services sector. Carriers have also invested in research and innovation centres, with the aims of facilitating industry collaboration and developing use cases. Telstra and Ericsson have both established 5G Innovation Centres, and Optus has partnered with Curtin University to co-invest in 5G research and learning amongst students, researchers, and enterprise.

The Australian Government recognises the importance of 5G technology for all levels of government and partners with state and local Governments to pursue innovation and digital opportunities including deployment and use of 5G technology. Under the Western Sydney City Deal the Australian Government has supported the NSW Government and eight local councils to develop a 5G Strategy for the Western Parkland City. The Strategy provides the framework for governments at all levels to partner with the telecommunications industry to support investment, take-up and use of 5G, and supports trials of the technology to test 5G use cases and maximise connectivity in Western Sydney.

**Telecommunications Qualifications Updated 30 August 2019**

ICT20219- Certificate II in Telecommunications Network Build and Operation

ICT20319- Certificate II in Telecommunications Technology

ICT30419- Certificate III in Telecommunications Network Build and Operation

ICT30519- Certificate III in Telecommunications Technology

ICT41219 - Certificate IV in Telecommunications Engineering Technology

ICT41119 - Certificate IV in Telecommunications Network Design