

5G – Enabling Smart Cities, Smart Places and Smart Communities



5G is the 5th generation of mobile networks, a significant evolution of today's 4G networks.

It is designed to meet the very large growth in data and connectivity of today's modern society, the need to connect the Internet of Things (IoT) with billions of connected devices, and tomorrow's innovations.

In short - 5G will deliver faster network speeds, better response times and greater capacity than earlier generations of mobile technology.



Local Government embracing the benefits of 5G technology

Australia's local governments are increasingly developing smart places strategies and supporting projects to solve problems and improve the lives of their residents, and capability of their businesses.

Rather than the technology being a starting point, the public sector is 'citizen centric' - designing solutions to improve the human experience. Communications networks, sensors, and IoT are then drafted and applied to solve problems and make life easier.

As these solutions rely on increased network capacity, faster download speeds, and lower latency, 5G will become a natural choice for smart place connectivity.



5G on the Smart City Roadmap

Across Australia, the number of smart city projects being undertaken by local government is growing. To help with the advancement of smart city solutions, in August 2020 Standards Australia released the **Smart Cities Standards Roadmap**.

According to the Roadmap, technologies such as 5G are considered key enablers to smart city initiatives. Standards Australia has also recognised the rapidly changing smart city ecosystem, including new initiatives where complexity, new knowledge and widespread community impact will require in-depth review.



5G – Enabling Smart Cities, Smart Places and Smart Communities

5G and Environmental Sustainability

The local government sector's 'smart' vision focuses on creating efficient, prosperous, and sustainable communities open to innovation and emerging sustainability opportunities. 5G is designed to be inherently more efficient than its predecessors, with data transmitted over a 5G network resulting in fewer emissions per unit than pre-5G networks. The mobile carriers are working to reduce and offset an increase in network energy use.

5G's most important contribution to energy efficiency will come from enabling users and especially the 5G-driven Internet of Things, and this is forecast to contribute to energy efficiency and ultimately a net-reduction in carbon emissions¹.

Smart wirelessly connected appliances, factories, council buildings, cities and transportation grids will be able to optimize and reduce their power consumption, just like networks and data centres do at present.

As a technology that enables smart cities and smart places, 5G can make a meaningful contribution to local and global efforts to reduce Greenhouse Gas emissions and mitigate climate change.



What new infrastructure will be needed to deliver the service?

5G will initially operate in conjunction with existing 4G networks before evolving to fully standalone networks.

5G networks are designed to work in conjunction with 4G networks using a range of macro cells in towers, poles and rooftops, small cells on poles and buildings and dedicated in-building systems.

Small cells are mini base stations designed for very localised coverage typically out to a few hundred metres, providing in-fill capacity for the larger macro network.

Small cells will be very important for future 5G networks and will evolve to include the use of 'millimetre wave' radio frequencies.

Development Approval and Community Engagement

The companies in Australia deploying and operating 5G mobile network infrastructure – Telstra, Optus and Vodafone (part of the TPG Telecom Group) are seeking to augment existing 4G networks and rapidly deploy new 5G networks in parallel.

Some of this infrastructure including small cells, is referred to as '**Low-Impact**', as it typically meets Australian Government requirements, so does not require council development approval or consent.

Nevertheless, the carriers must follow the requirements of a mandatory **Code** developed to ensure notification and consultation is proportionate to the proposed telecommunications facility. Where a new telecommunications structure requires council development approval, the carriers will engage in accordance with Council's local requirements. To find out more about 'Low Impact' Facilities and to view the Code, please visit the links section.

A top priority for AMTA and its members is to ensure compliance with Australia's safety standards.

The legislative authority to control radiofrequency (RF) exposures from mobile radiocommunications facilities derives from the Federal Radiocommunications Act 1992, and the applicable limits are set out in the ARPANSA Standard for Limiting Exposure to Radiofrequency Fields – 100 KHz to 300 GHz (RPS S-1). The limits are based on the recommendations of the International Commission for Non-Ionizing Radiation Protection (ICNIRP).

When it comes to demonstrating compliance with safety standards, Australian industry systems are world leading and offer unparalleled transparency.

Carriers must prepare an Environmental EME Report in a format approved by the ARPANSA and these are uploaded onto the publicly accessible Radio Frequency National Site Archive at www.rfnsa.com.au. The Report shows calculated EME levels and compliance with the Standard for each and every facility, including additions to that facility.

To find out more, please visit the [links section](#).

¹ Malmodin, J & Bergmark, P, Ericsson, Sweden "Exploring the effect of ICT solutions on GHG emissions in 2030" (2015) <https://www.ericsson.com/en/reports-and-papers/research-papers/exploring-the-effects-of-ict-solutions-on-ghg-emissions-in-2030>

5G – Enabling Smart Cities, Smart Places and Smart Communities

AMTA

Australian Mobile
Telecommunications
Association



Working with Councils and Communities

AMTA and the mobile network carriers deploying 5G work closely with councils on a range of matters relating to deployment.

In addition to participating in consultation associated with proposed telecommunications facilities, AMTA regularly meets with local government and welcomes the opportunity to brief your Council on matters including:

- The industry's current and future plans to deploy additional 4G and new 5G network infrastructure;
- The role of mobile networks as an enabling 'smart places' technology;
- The Industry's approach to community engagement;
- Compliance with safety standards for electromagnetic energy; and,
- Any local matters that are of interest to Council and your community.

Smart Councils

AMTA encourages Councils to embrace 5G and IoT in projects across the local government area. Councils throughout Australia are focusing on using emerging technology to improve service delivery and engagement with residents.

Over the next five years and beyond, 5G has the potential to transform a council's operations and engagement with residents and visitors by offering an immersive and tactile experience through the use of technology such as augmented reality, virtual reality, and mixed reality that can be enabled by 5G networks.

Inclusion of 5G as critical urban infrastructure in a council smart city strategy will ensure that the strategy is structured for long-term success. Recognition of 5G in addition to legacy technologies will allow more flexibility in adjusting the program to meet changing trends and needs of the life of the strategy.

Want to talk with AMTA and the mobile industry about 5G, Smart Cities and Smart Places?

Here at AMTA, we regularly consult with councils and participate in the consultation process when smart city and smart place strategies are in development.



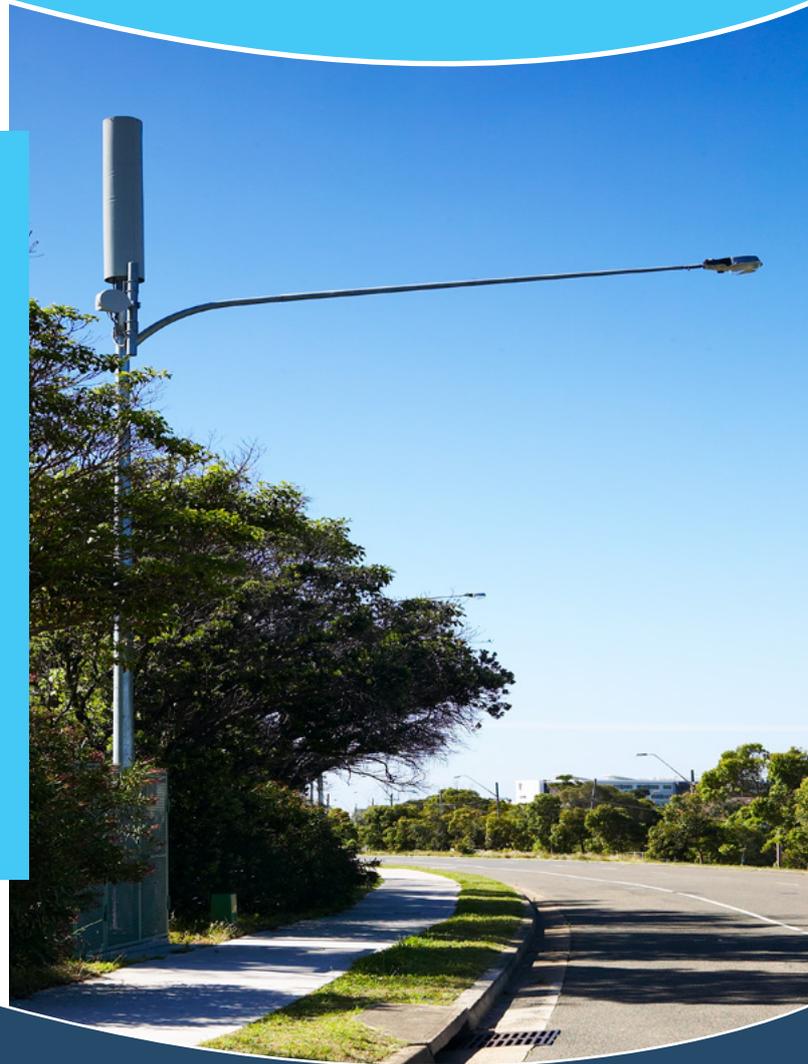
AMTA and its members would be pleased to discuss how mobile networks, including 5G technology, can enable smart applications and the IoT to the benefit of your council and community.



5G – Enabling Smart Cities, Smart Places and Smart Communities

Who is AMTA?

AMTA is the peak industry body and voice of Australia's mobile telecommunications industry. It counts amongst its members the three mobile network operators currently deploying and operating mobile networks in Australia: Telstra, Optus and Vodafone (part of the TPG Telecom Limited Group) together with service providers, equipment vendors, infrastructure suppliers and support industries. In a competitive environment, our members are constantly investing in their existing 4G networks, and are now racing to build 5G.



Links

Standards Australia Smart Cities Roadmap

www.standards.org.au/getmedia/bfe42f98-011e-4798-8fa5-5b70c8a2a6bd/SA_Smart_Cities_Roadmap.pdf.aspx

Industry Code for Mobile Phone Base Station Deployment (2020)

www.commsalliance.com.au/Documents/all/codes/c564

ACMA overview of Council's role and low impact facilities

www.acma.gov.au/local-councils-and-network-facilities

Australian Mobile Telecommunications Association

amta.org.au

AMTA State and Territory 5G Infrastructure Readiness Assessment Edition 1

amta.org.au/5g-infrastructure-readiness-assessment/

ARPANSA EME Environmental Report

www.arpansa.gov.au/research/surveys/environmental-electromagnetic-energy-reports

Radio-Frequency National Site Archive

www.rfnsa.com.au