



Government
Services

Victorian Government Submission 2024 Regional Telecommunications Review

Table of Contents

Introduction	3
Summary of recommendations	5
Future directions	7
Focus area 1: New approaches for underserved premises and locations	7
Focus area 2: New approaches for emergency resilience	8
Focus area 3: Focus on affordability and connectivity literacy	11
Strategy 1: Set standards for access	12
Strategy 2: Better use of data	13
Strategy 3: Overarching strategy	14

Attachment A - Digital context	16
Changing community expectations	16
Technology developments	16
Greater impacts from natural disasters	17
More than just infrastructure	18
Role of Government	18
Significant Commonwealth activity	19

Attachment B – Connectivity challenges	20
Key theme 1: Access gaps	20
Key theme 2: Telecommunications resilience	24
Key theme 3: Digital inclusion	28

Attachment C - Connectivity standards	33
Outside the home	33
Inside the home	35
Business and organisation connectivity	36
Community connectivity	37
Summary of connectivity standards	39

Introduction

The Victorian Government's submission to the 2024 Regional Telecommunications Review highlights the rising expectations and needs of regional communities to have quality and reliable access to new and emerging digital technologies in a continually evolving digital landscape.

Building on substantial improvements to regional telecommunications over the last 15 years, the Commonwealth should lead a national approach to redefine what it means to be 'adequately connected' in the 21st century and to make sure no-one is missing out on emerging digital services and capabilities.

The long-term trend of increasing digitisation and demand for high quality and resilient services continues

Since the last Regional Telecommunications Review, the needs of regional communities for high-quality and resilient digital connectivity have continued to rise, driven by the move towards more and more online activities.

Businesses and governments continue lifting their digital capabilities to meet the needs and expectations of an increasingly tech-enabled customer base, contributing to widespread economic and social benefits.

This requires continued investment to ensure network capacity can accommodate continually increasing data consumption over time.

It also requires concerted effort to leave no-one behind. As economic and social benefits of the digital economy grow, the gulf between digital 'haves' and 'have nots' widens.

Recent natural disasters have also highlighted the critical need for robust communications infrastructure. Disasters leave communities vulnerable when connectivity is lost, hindering emergency response and jeopardizing community well-being. At-risk communities need dependable digital connectivity. This is not a luxury, but a vital lifeline during emergency events.

New strategies are needed

The regional connectivity landscape is changing in ways that suggest that previous focus areas and approaches need to be replaced with new strategies.

5G network deployments, NBN's network upgrades and the emergence of low-earth orbit satellite (LEO Sat) services may offer solutions for quality and availability issues in regional areas. With these technologies virtually all premises may soon be able to access a high-quality internet service capable of meeting their connectivity needs.

Quality mobile connectivity for all regional customers is more challenging, but LEO Sat-based mobile services should solve persistent coverage gaps.

For their potential to be fully realised, these new technologies need to be affordable and people need to understand the options available.

Further detail on the connectivity landscape is provided at [Attachment A](#).

FOCUS AREAS

Specific challenges that need dedicated attention



New approaches for underserved premises and locations

Programs that use new technologies and subsidy models are needed to address the underserved premises and communities previously not considered commercially viable.



New approaches for emergency resilience

Clear resilience standards, targeted investment and better data sharing between essential service providers are needed to support communities during and after emergency events.



Focus on affordability and connectivity literacy

As coverage from new technologies overcome access barriers, affordability and connectivity literacy become relatively more significant barriers that need to be addressed.

STRATEGIES

Cross-cutting approaches that are needed to drive progress in the focus areas



Set standards for access

The Commonwealth Government needs new standards defining and guaranteeing the *universal* services everyone should have access to at an affordable price. In addition, higher standards of *adequate* service for communities should guide Commonwealth Government policy and programs priorities.



Better use of data

The Commonwealth Government needs to lead a national approach to obtaining and managing data. Better data is required to help governments identify issues, prioritise investment and monitor progress. Better data is also required to enable emergency management activities and support consumers to make informed decisions.



Overarching strategy

The Commonwealth Government needs to develop and implement an overarching strategy. This should underpin more targeted engagement, investment and activity across governments and the telecommunications industry, and help communities understand how policy and program activity will deliver the outcomes they need.

Figure 1. Proposed focus areas and strategies for future Commonwealth Government regional telecommunications policy and program activity

Summary of recommendations

Recommendation 1

The Commonwealth Government should develop programs that use new technologies and subsidy models to address the underserved premises and communities previously not considered commercially viable. This should focus on:

- Affordability of new network coverage provided by LEO Sats for universal service and digital inclusion purposes, including consideration of user subsidies and industry cross-subsidies.
- Scaled up focus on solutions for underserved regional businesses located outside towns/populous areas, for example farms and tourist businesses.
- If 3G switch off exposes new mobile coverage gaps, a specific program to prioritise mobile coverage to those areas.
- Assessing the feasibility of dynamic spectrum licencing conditions to improve network coverage, competition, affordability and innovation in regional areas.

Recommendation 2

Clear resilience standards, targeted investment and better data sharing between essential service providers are needed to support communities during and after emergency events. Specific measures should include:

- The Commonwealth Government establishing a national community connectivity resilience standard, for example, communities having at least one accessible telecommunications service capable of operating for a set period without network power supply.
- In line with a national community connectivity resilience standard, the Commonwealth Government continuing funding for existing Strengthening Telecommunications Against Natural Disasters (STAND) program community-WiFi locations and expanding this and other resilience programs, such as the Telecommunications Disaster Resilience Innovation (TDRi) program and the Disaster Ready Fund (DRF) to meet this resilience objective.
- The Commonwealth Government establishing a national telecommunications data platform, supported by appropriate regulation and Commonwealth agency resourcing, to provide real-time geospatial data on coverage and availability of telecommunications services for emergency services and other essential service providers in emergencies and outages.
- The Commonwealth Government ensuring that Triple Zero, including the current carrier agnostic 'camp-on' functionality, is applied to LEO Sat-to-mobile services and the implementation of a mobile emergency roaming capability is prioritised.

Recommendation 3

As coverage from new technologies overcome access barriers, affordability and connectivity literacy become relatively more significant barriers that need to be addressed. The Commonwealth Government should:

- Update the Commonwealth Telephone Allowance to enable low-income households to access both a mobile service and high-quality home internet service with adequate data inclusions.
- Develop a low-income broadband product in line with the consumer advocacy from the Australian Communications Consumer Action Network (ACCAN).
- Consider targeted user subsidy programs to help lower income households in underserved areas to access higher cost services such as LEO Sat solutions.
- Support the establishment of a national device bank that will address affordability barriers preventing low-income households from accessing the devices they need to participate online.
- More proactively promote initiatives such as the Regional Tech Hub and First Nations Digital Support Hub (not yet operational).

Recommendation 4

The Commonwealth Government should establish new standards defining and guaranteeing the universal services everyone should have access to at an affordable price. In addition, the Commonwealth Government should establish higher standards of adequate service for communities to guide Commonwealth Government policy and programs priorities.

Recommendation 5

The Commonwealth Government should support a program, to be co-developed with States, Territories and local government representatives, to profile Australian communities and benchmark the standard of services they can currently access, to identify access gaps and enable prioritisation of Commonwealth Government programs.

Recommendation 6

The Commonwealth Government should commit to developing a multi-use national telecommunications data platform providing information for emergency management, policy development, and consumer use.

Recommendation 7

The Commonwealth Government should engage telecommunications providers, Commonwealth, State and Territory agencies and consumer representatives in strategy development for and governance of the national platform outlined in recommendation 6.

Recommendation 8

The Commonwealth should lead the development and implementation of a regional telecommunications strategy recognising its responsibilities for telecommunications national policy setting, managing the legislative and regulatory environment and achieving connectivity outcomes for regional and rural Australians.

Recommendation 9

The Regional Connectivity Ministers' Roundtable should be retained to engage State and Territories in the implementation of the strategy and leverage their key service delivery responsibilities and align portfolio priorities in support of a national approach to regional telecommunications.

Future directions

The section below describes three focus areas for action aligned to the connectivity challenges outlined in [Attachment B](#), along with three strategies that will drive more effective activity in future.

Focus area 1: New approaches for underserved premises and locations

Recommendation 1: *The Commonwealth Government should develop programs that use new technologies and subsidy models to address the underserved premises and communities previously not considered commercially viable. This should focus on:*

- *Affordability of new network coverage provided by LEO Sats for universal service and digital inclusion purposes, including consideration of user subsidies and industry cross-subsidies.*
- *Scaled up focus on solutions for underserved regional businesses located outside towns/populous areas, for example farms and tourist businesses.*
- *If 3G switch off exposes new mobile coverage gaps, a specific program to prioritise mobile coverage to those areas.*
- *Assessing the feasibility of dynamic spectrum licencing conditions to improve network coverage, competition, affordability and innovation in regional areas.*

Households and businesses that still cannot access the services they need have slipped through the cracks of Commonwealth Government policy and programs. New approaches are needed to ensure these premises have reasonable access to the services they need.

The incremental market-based co-investment programs which have been employed to date (e.g. Mobile Black Spot Program [MBSP], Peri-Urban Mobile Program [PUMP] and Regional Connectivity Program [RCP]) are not suitable for providing comprehensive solutions using new technologies such as LEO Sats. The existing programs inevitably fail to reach locations that are too non-commercial for telecommunications providers to prioritise, even with government subsidy. These areas include very small towns, remote communities, sparsely populated locations, fringes of network boundaries and some transport routes.

Historically, Commonwealth Government programs have provided capital subsidies for individual carriers to expand coverage of terrestrial mobile and broadband networks. Using new technology such as LEO Sats as well as active network sharing, extending network coverage should not require large capital investment. To achieve equitable access to services for all, it will be more practical to invest Commonwealth Government funding, or industry cross-subsidies to provide an alternative service or deliver an affordability support. Examples of alternative supports could include:

- Providing subsidised access to a LEO Sat service if the NBN satellite or fixed wireless network cannot deliver an adequate service to a customer.
- Providing a subsidised home internet service to low-income households with poor in-premises mobile network coverage, enabling access to data and telephony over WiFi instead (noting low-income households are more likely to rely solely on a mobile service meaning poor mobile coverage can be a significant issue).
- Fostering more infrastructure sharing among telecommunications providers, to enable more projects to be commercially viable while delivering competitive market outcomes.

For regional businesses that often have more significant and specific connectivity needs, new approaches might include investment programs aimed at delivering targeted place-based connectivity solutions, like the Commonwealth Government's On Farm Connectivity Program (which is of very limited scale and duration to really meet the connectivity needs of the agriculture sector). Different types of connectivity solutions could also be considered, including private 5G networks, low-bandwidth IoT networks, or fixed wireless solutions where these are not adequately provided by the market and where investment can drive regional digitalisation and productivity growth.

The switch-off of 3G networks later in 2024 may also present new connectivity issues for some premises in regional areas that have relied on 3G coverage to provide a level of mobile connectivity. While carriers such as Telstra have indicated their 4G networks will provide equivalent coverage once 3G is switched off, we know that coverage maps often do not reflect the real-world experience of regional customers. This could mean that areas that had 3G mobile coverage previously are left without any coverage, including losing Triple Zero access, once these networks are switched-off. The Commonwealth Government needs to monitor this risk and be ready to intervene with a dedicated funding program if required.

Another potential approach to improving regional connectivity is dynamic spectrum licensing conditions. The Commonwealth Government should consider the feasibility of implementing conditions such as rollout obligations, use-it-or-lose-it/share-it requirements, and place-based and geographically prescribed spectrum licences. Dynamic licensing conditions have the potential to reduce the barriers to entry that have traditionally existed in regional telecommunications markets. More efficient use of spectrum that promotes provision of services in underutilised regional areas could improve coverage, competition, affordability and innovation.

There will continue to be a role for existing industry co-investment programs, which have been effective at inducing industry to invest further into their networks. For example, network coverage and capacity issues that emerge over time as data consumption strains network capacity can be addressed through existing program models, such as the RCP.

To support new approaches to underserved areas, better data is a critical requirement (see Strategy 2 – Better use of data).

Further detail related to this focus area is provided at [Attachment B – Key theme 1: Access Gaps](#).

Focus area 2: New approaches for emergency resilience

Recommendation 2: *Clear resilience standards, targeted investment and better data sharing between essential service providers are needed to support communities during and after emergency events. Specific measures should include:*

- *The Commonwealth Government establishing a national community connectivity resilience standard, for example, communities having at least one accessible telecommunications service capable of operating for a set period without network power supply.*
- *In line with a national community connectivity resilience standard, the Commonwealth Government continuing funding for existing Strengthening Telecommunications Against Natural Disasters (STAND) program community-WiFi locations and expanding this and other resilience programs, such as the Telecommunications Disaster Resilience*

Innovation (TDRI) program and the Disaster Ready Fund (DRF) to meet this resilience objective.

- *The Commonwealth Government establishing a national telecommunications data platform, supported by appropriate regulation and Commonwealth agency resourcing, to provide real-time geospatial data on coverage and availability of telecommunications services for emergency services and other essential service providers in emergencies and outages.*
- *The Commonwealth Government ensuring that Triple Zero, including the current carrier agnostic 'camp-on' functionality, is applied to LEO Sat-to-mobile services and the implementation of a mobile emergency roaming capability is prioritised.*

A range of valuable initiatives have been implemented by the Commonwealth Government following the 2019-20 Black Summer bushfires to improve telecommunications network resilience. These include the STAND, TDRI and DRF programs which have explored innovative solutions that can underpin more resilient telecommunications.

While delivering beneficial outcomes, these programs lack a clear definition of what resilient communications should look like during an emergency. This leads to uncoordinated investment and no shared understanding of the desired outcomes, making progress difficult to assess over time.

New approaches are needed as part of a coordinated strategy to improve telecommunications resilience that should include:

- **Establishment of a resilience standard** – informed by the interim findings of Victoria's Network Outage Review¹ and the impacts of other recent natural disasters, the Commonwealth Government should adopt a community connectivity resilience standard. The Network Outage Review interim report proposes continued provision of telecommunications services for 72 hours without network power supply.

It is envisaged that a national community connectivity standard will encourage innovative solutions involving multi-carrier cooperation and involvement of third parties such as local government, emergency services and power providers. Current telecommunications resiliency solutions such as the STAND community-WiFi sites and Telstra's Automatic Transfer Units allow communities to help telecommunications providers operate these solutions.

Telecommunications carriers should also be encouraged to provide interim connectivity solutions in coordination with energy suppliers. The Network Outage Review interim findings outline how energy distributors are to establish 'quick-connect' points and other necessary upgrades in towns that will enable temporary generation for key assets/businesses within 12 hours of a prolonged power outage. Telecommunications carriers should be required to work with energy providers to leverage 'quick-connect' points and prioritise connectivity for targeted services (such as supermarkets, banks and petrol stations) while broader remediation works take place.

¹ Department of Energy, Environment and Climate Action, "Network Outage Review." 2024.

The Victorian Government will consider the final report of the Network Outage Review shortly and may then provide further detail or recommendations regarding resilience standards and targets.

- **Coordinated investment** – continue investment programs like STAND, TDRI and DRF. The scale of investment over time should be based on an assessment of where resilience standards are not met, including consideration of communities subject to more frequent power outages not necessarily due to natural disasters.

Funding for the STAND program community-WiFi sites will expire in 2025. The Commonwealth Government should continue funding these services, which have demonstrated utility both during and outside of emergency events. These sites could contribute to meeting a national community connectivity resilience standard.

Additional power-resilient public WiFi initiatives could also be supported such as augmenting payphones as resilient forms of free WiFi, noting that Telstra has already invested in WiFi at many of its public payphones.

- **National telecommunications data platform** - real-time information geospatial and address level information on service availability is needed to improve planning for and response to natural disasters and other threats to telecommunications networks. This will enable stronger coordination across telecommunications providers, other essential service providers and emergency management agencies.

A single national shared data platform should be established to avoid the inefficiency and operation limitations of multiple telecommunications carriers and jurisdictions establishing proprietary systems. Further, the Commonwealth Government is uniquely placed to establish this as an enduring capability with its policy and regulatory role in telecommunications and potential to leverage the National Joint Common Operating Picture initiative. Victoria has already called for this capability to be established in its submission to the Commonwealth Government review into the 8 November 2023 Optus Outage.

In addition to monitoring current terrestrial mobile and broadband networks, the data platform will need to be able to monitor emerging services such as LEO Sat and active sharing by mobile carriers.

This data platform could also support non-emergency telecommunications data requirements for policy setting, targeting connectivity investment and improving consumer access to information (see Strategy 2 – Better use of data).

- **Triple Zero over LEO Sat and emergency mobile roaming** – LEO Sat-to-mobile device connectivity should radically increase the availability of Triple Zero access, particularly in regional and remote areas. This kind of capability could be significant in helping to achieve the universal standard defined in this submission (see [Attachment C – Connectivity standards](#)).

While providers such as Optus have indicated that they expect to provide a Triple Zero service with 'camp-on' over LEO Sat-to-mobile services, the Commonwealth Government should mandate this requirement to ensure industry and other government entities work together to establish this capability. Implementation of an emergency mobile roaming solution is currently being undertaken by a Commonwealth Government and industry Working Group and should be prioritised.

Further detail related to this focus area is provided at [Attachment B – Key theme 2: Telecommunications resilience](#).

Focus area 3: Focus on affordability and connectivity literacy

Recommendation 3: *As coverage from new technologies overcome access barriers, affordability and connectivity literacy become relatively more significant barriers that need to be addressed. The Commonwealth Government should:*

- *Update the Commonwealth Telephone Allowance to enable low-income households to access both a mobile service and high-quality home internet service with adequate data inclusions.*
- *Develop a low-income broadband product in line with the consumer advocacy from the Australian Communications Consumer Action Network (ACCAN).*
- *Consider targeted user subsidy programs to help lower income households in underserved areas to access higher cost services such as LEO Sat solutions.*
- *Support the establishment of a national device bank that will address affordability barriers preventing low-income households from accessing the devices they need to participate online.*
- *More proactively promote initiatives such as the Regional Tech Hub and First Nations Digital Support Hub (not yet operational).*

In the past, regional telecommunications infrastructure coverage was the major barrier excluding regional people from participating in the online world. This is becoming less relevant with progressive investment and new technology developments, resulting in affordability and connectivity literacy becoming more significant issues. Digitally excluded people in regional Australia rely on connectivity as a range of services are increasingly provided online, including essential government services.

Most households now require connectivity that can support multiple users and devices to connect to the internet simultaneously for work, education and lifestyle activities. Those unable to afford a suitable telecommunications service and devices for this level of online activity are at a disadvantage and are likely to experience economic and social exclusion which will become worse over time as our lives become more and more digital.

From an affordability perspective, more systemic support could involve:

- **Commonwealth Telephone Allowance** – this allowance should be increased to better reflect the current costs of being adequately connected. This should enable low-income households to access both a mobile service and high-quality home internet service with adequate data inclusions.
- **Low-income broadband product** – further work is needed to deliver an affordable low-income home broadband product in the market. Such a product should include a 50/20 Mbps service with unlimited downloads for \$30 per month retail cost for eligible customers, in line with the consumer advocacy from ACCAN. This in combination with a modernised telephone allowance would fundamentally improve the affordability of connectivity for low-income households.
- **Targeted user subsidy programs** – for premises poorly served by existing services, a user subsidy program could enable adoption of better quality but higher cost services such as LEO Sat solutions. This may be more cost-effective than subsidising further terrestrial network expansion.

- **Device bank** – support the establishment of a national device bank that will address affordability barriers preventing low-income households from accessing the devices they need to participate online.

Connectivity literacy is another barrier impacting digital engagement. For some regional households, lack of awareness of best value for money connectivity options and how to access them (that is, connectivity literacy) may be the barrier that prevents their needs being met.

Lack of understanding about the most fit-for-purpose services available can result in poor user experiences. Improving connectivity awareness and literacy is a major step needed to improve public perceptions about the quality of the regional digital connectivity landscape, which is becoming significantly better for most households and communities.

The Regional Tech Hub is a valuable initiative funded by the Commonwealth Government that supports regional stakeholders to access independent advice about telecommunications services available to them. Anecdotally, the awareness of this initiative seems limited among regional stakeholders and therefore would benefit from more actively promoting the service through suitable networks and forums.

Even when consumers have good understanding of connectivity options, current coverage maps are not granular enough nor reflective of real-world performance. More useful and integrated tools could be developed to enable people and businesses to better understand the options available to them (see Strategy 2 – Better use of data). This would support more informed decisions around where people choose to live and work when connectivity is a high priority.

Further detail related to this focus area is provided at [Attachment B – Key theme 3: Digital inclusion](#).

Strategy 1: Set standards for access

Recommendation 4: *The Commonwealth Government should establish new standards defining and guaranteeing the universal services everyone should have access to at an affordable price. In addition, the Commonwealth Government should establish higher standards of adequate service for communities to guide Commonwealth Government policy and programs priorities.*

Recommendation 5: *The Commonwealth Government should support a program, to be co-developed with States, Territories and local government representatives, to profile Australian communities and benchmark the standard of services they can currently access, to identify access gaps and enable prioritisation of Commonwealth Government programs.*

A lack of standards leads to uncoordinated activity and a lack of clarity among stakeholders and communities about what level of connectivity can and should be expected. In the absence of these standards, it is difficult to focus attention where it is needed most.

Program and investment activity in recent years has delivered substantial improvements to many locations across Australia. However, it has been difficult to assess those investments against an agreed set of standards and consider the need for further investment in one area versus another.

Standards can be set around legislated universal minimums as well as policy targets that reflect what it means to be 'adequately' connected. Understanding the real-world performance of telecommunications services is critical, including being able to accurately

identify where telecommunications services do not meet a reasonable level of performance to meet user needs. Indicative standards that could be considered for adoption have been outlined at [Attachment C](#) of this submission.

Clear standards set by the Commonwealth Government for what is considered *minimum*, *adequate* and *good* connectivity would clarify the role of future investment programs and policy changes, and help stakeholders focus on determining where these standards are not met. Better use of data could also provide meaningful insights to monitor priorities.

A national program to profile and benchmark Australian communities based on these or similar connectivity standards is essential. States and Territories have developed varied models which can inform and add to a national approach, but a common set of benchmarks, data points and reporting tools are necessary to enable prioritisation of national programs. Some models of interest include South Australia's *Statewide Connectivity Investment Prioritisation Framework*, New South Wales' Digital Connectivity Index² and Victoria's Regional Economic Development Strategies³ and Regional Digital Plans⁴.

Strategy 2: Better use of data

Recommendation 6: *The Commonwealth Government should commit to developing a multi-use national telecommunications data platform providing information for emergency management, policy development, and consumer use.*

Recommendation 7: *The Commonwealth Government should engage telecommunications providers, Commonwealth, State and Territory agencies and consumer representatives in strategy development for and governance of the national platform outlined in recommendation 6.*

A single underlying data platform should be developed to:

- support emergency activities
- service availability and performance mapping to help target telecommunications policy and programs
- provide telecommunications service information to consumers

The Commonwealth Government is ideally placed to provide the agency leadership, national industry and cross jurisdictional coordination, funding and regulatory support to implement a sustainable platform. Telecommunications carriers and state and territory governments will be able to contribute significant data, integration with existing platforms and coordination of requirements. Developing a multi-use platform would provide the greatest value for money and effort and would justify the necessary investment.

This submission has previously identified an acute need to establish a national telecommunications data platform for emergencies and outages (refer to Focus area 2: New approaches for emergency resilience, and recommendation 2).

² <https://www.nsw.gov.au/departments-and-agencies/nsw-telco-authority/connectivity-leadership/nsw-digital-connectivity-index>

³ <https://www.rdv.vic.gov.au/resources/regional-economic-development-strategies>

⁴ <https://www.rdv.vic.gov.au/resources/digital-plans>

At the same time, a major impediment to telecommunications policy and programs has been a lack of data showing where networks are unable to meet household, business and community needs. While this issue has been identified through past Regional Telecommunications Reviews, it has been narrowly focussed on specific issues such as the need for better mobile coverage data, missing the opportunity for a more strategic approach.

We are now at a critical juncture where more accurate data is needed to enable policy and programs that precisely target very specific unmet regional telecommunications needs. Without better data, future Commonwealth Government policy and programs will be inefficient as it is getting harder for governments to identify issues, prioritise investment and monitor progress.

For some premises and locations, mostly in peri-urban, regional, rural and remote areas, there are still gaps leading to inadequate service quality. In Victoria, these premises are not easily identifiable or readily revealed through existing co-investment programs. This highlights the need for a new approach to data to be led by the Commonwealth, and requiring active engagement with the telecommunications industry.

Data needs to reflect the real-world performance and experience of telecommunications networks in terms of coverage, performance, capacity, reliability and resilience. The data also needs to be available at an appropriately granular level to inform future investment priorities and eligibility to access other kinds of support (refer to Focus area 1 - New approaches to address underserved premises and locations).

Once appropriate connectivity standards are established, benchmark data will reveal those communities that need Commonwealth Government policy and program support. (refer to Strategy 1: Set standards for access and recommendations 4 and 5).

More transparent and comparable information on coverage, reliability and real-world performance is also needed by consumers to support connectivity literacy (refer to focus area 3: Focus on affordability and connectivity literacy and recommendation 3). This can support consumers to select the services that best suit their needs and inform major decisions such as the purchasing of property and operating businesses in locations with good connectivity. This information can also help communities to advocate for better services.

Strategy 3: Overarching strategy

Recommendation 8: *The Commonwealth should lead the development and implementation of a regional telecommunications strategy recognising its responsibilities for telecommunications national policy setting, managing the legislative and regulatory environment and achieving connectivity outcomes for regional and rural Australians.*

Recommendation 9: *The Regional Connectivity Ministers' Roundtable should be retained to engage State and Territories in the implementation of the strategy and leverage their key service delivery responsibilities and align portfolio priorities in support of a national approach to regional telecommunications.*

Substantial Commonwealth Government investment and policy and program activity has been progressed in recent years. This has occurred without a clear strategy articulating the tools and methods being employed, or the defined outcomes being targeted. While work to date has undoubtedly improved services for many Australians, future activity needs to be guided by a clearer vision.

Future regional telecommunications policy and programs, including the actions proposed in this submission need to be brought together into an overarching strategy. Such a strategy would better coordinate government, industry and community action and promote alignment with a broader national strategy aimed at ensuring everyone has reasonable and affordable access to the digital world.

Attachment A - Digital context

Changing community expectations

COVID-19 restrictions accelerated the digitalisation of everyday transactions and services. Essential government services, shopping, banking, healthcare, entertainment, and education moved rapidly online and required internet connectivity and a device. This digital shift has sustained beyond lockdowns, evidenced by the prevalence of remote or hybrid working with 37% of employed people regularly working from home.⁵

Businesses and governments continue lifting their digital capabilities to meet the needs and expectations of an increasingly tech-enabled customer base. As services move more and more to digital channels, the tools required for access are changing. More than nine out of ten Australians now own a smartphone,⁶ creating expectations of mobile-friendly user interfaces. For example, user preferences have shifted significantly toward digital banking transactions over cash, shown by the value of mobile wallet transactions increasing 124-fold between 2018 and 2022.⁷ Widespread reliance on digital transactions necessitates digital banking capabilities for both consumers and businesses.

The ubiquity of digitally enabled services and transactions and rapid growth in connected devices has raised community connectivity expectations. People increasingly expect access to digital services whenever and wherever they need. The Victorian Government's Connecting Victoria program received substantial feedback during community consultation in 2021 highlighting these expectations for good-quality and reliable connectivity. Thousands of regional stakeholders expressed their frustration with poor quality, patchy and unreliable services seen as unacceptably out of step with the modern digital age.

The breadth of activities now taking place online and the range of devices and services available to undertake them complicates the picture of a modern universal service framework. However, the central role digital connectivity now plays in our lives demands an appropriate framework to ensure all communities have reasonable access to the services they need.

Technology developments

The telecommunications infrastructure landscape and access to services looks remarkably different today compared to five years ago. 5G networks are now being rolled out by all three mobile network operators. Having completed its primary rollout, NBN Co is now rolling out a network upgrade program moving more premises onto fixed-line technologies and upgrading the speed and capability of its satellite and fixed wireless services. LEO Sat services are now deployed at commercial scale and available to premises right across Australia, including for regional businesses such as in agriculture and advanced manufacturing sectors.

⁵ Australian Bureau of Statistics, "Working Arrangements, August 2023." 2023.

⁶ Deloitte Access Economics, "Mobile Nation." 2022.

⁷ Australian Banking Association, "Bank On It – Customer Trends 2023." 2023.

The future evolution of LEO Sat services may support future direct-to-mobile handset connectivity. As this occurs, it may rapidly infill mobile black spots across Australia for customers prepared and able to adopt such a service.

These technology developments point to a state-of-play a few years out where the services nearly everyone needs are available, assuming you can afford them and can navigate, adopt, and use the right options, which is not a given.

Amidst this broad improvement in service quality and availability, there are many whose existing services do not meet their needs. Many regional stakeholders will continue to experience patchy services from terrestrial mobile networks where they live, work and visit, while others are in areas that do not receive a reliable, high-quality internet service on the network they are a customer of. These issues present important questions about how they can and should be addressed in a continually changing technology landscape.

Greater impacts from natural disasters

Emergency events in recent years have demonstrably heightened public expectations for reliable communications infrastructure. This is partly owing the extent of impacts caused by natural disasters but also due to the greater reliance people place on access to communications.

The devastating 2019-20 Black Summer bushfires highlighted the vulnerability of telecommunications networks and the impacts on communities. The event demonstrated how prolonged power outages, a frequent consequence of natural disasters, can leave communities vulnerable and isolated. Subsequent disasters have only reinforced this reality.

As people come to rely more and more on mobile and broadband coverage, the prospect of losing connectivity is a source of significant community concern during emergencies. Relatedly, many stakeholders have expressed concern about the upcoming 3G switch off for those that have had to rely on this network to date.

Residents in Mirboo North, Cockatoo, Monbulk, Gembrook and Emerald highlighted the significant psychological toll inflicted by communications loss during recent storm events in early 2024:

“The most debilitating aspect of the blackout was no mobile reception – went out quickly when power went out”⁸ - The Hills community engagement, 2024 (Network Outage Review, Department of Energy, Environment and Climate Action)

“When the mobile phone network drops out the whole community gets anxious”⁹ - Mirboo North community engagement, 2024 (Network Outage Review, Department of Energy, Environment and Climate Action)

The stress and anxiety associated with such disruptions emphasise the need for actions that can improve access to communications during and after emergency events. These experiences compel us to re-evaluate the current standards for communications resilience and question the appropriate level of connectivity citizens should have access to during emergencies.

⁸ Department of Energy, Environment and Climate Action, “Network Outage Review.” 2024.

⁹ Department of Energy, Environment and Climate Action, “Network Outage Review.” 2024.

More than just infrastructure

Closing the metro-regional digital divide requires a multifaceted approach beyond just rolling out mobile and broadband infrastructure in regional areas. Whilst providing access through telecommunications infrastructure is essential, affordability and digital capability are also crucial to ensuring regional stakeholders can engage effectively online.

The Australian Digital Inclusion Index (ADII) highlights that the number of Australians who are highly excluded remains substantial and that the benefits of digital inclusion are not evenly shared.¹⁰

The ability of people on low incomes to afford fit-for-purpose internet services, devices and data allowances is a significant barrier to online participation. Affordability can also be a barrier for people on modest incomes whose most suitable connectivity option is a higher cost LEO Sat service. People who lack the digital awareness and skills necessary to participate online are also at risk of digital exclusion.

Policy and program activity increasingly reflects a broader understanding about the complex nature of digital inclusion. This includes digital inclusion policy, strategy and program development by governments, industry and the non-government sector that aims to improve access, affordability and digital ability, particularly for digitally disadvantaged and vulnerable cohorts, such as older Australians, people on low incomes and First Nations people. This includes the need for a dedicated national focus on First Nations digital inclusion. National Agreement on Closing the Gap (Closing the Gap) Target 17 aims for Aboriginal and Torres Strait Islander people to have equal levels of digital inclusion by 2026. The Commonwealth's First Nations Digital Inclusion Plan builds on Closing the Gap Target 17 and provides a strategic framework and suite of existing and proposed actions to improve digital inclusion in three areas: Access, Affordability and Digital Ability.

Role of Government

Australia's experience of telecommunications has highlighted the shortcomings and market failures inherent in telecommunications infrastructure, particularly for a population dispersed over a large land mass. The history of Australia's telecommunications market shows the Commonwealth Government cannot and has not relied solely on market forces to ensure equitable and fit for purpose service coverage across the country.

The Commonwealth Government has primary responsibility for the telecommunications sector, and the adequacy of telecommunications services across Australia. This accountability is appropriate given that telecommunications companies and networks operate on a national level and consistency in the regulatory and legislative environment must be ensured.

There are complementary roles states and territories can and need to play alongside the Commonwealth to help target national policy and program settings and ensure their own services and functions can be delivered effectively.

¹⁰ Measuring Australia's Digital Divide. Australian Digital Inclusion Index 2023 https://www.digitalinclusionindex.org.au/wp-content/uploads/2023/07/ADII-2023-Summary_FINAL-Remediated.pdf

State governments must actively engage in telecommunications policy to help align portfolio priorities – including across local government, planning, regional economic development, and infrastructure (e.g. transport) - with national telecommunications policy and program settings. States are better placed to understand and communicate place-based priorities and can support local information provision, community engagement, program facilitation, and interaction with planning schemes.

States also have important roles that rely on telecommunications services and networks and that require national coordination, such as emergency management and public safety mobile broadband. Additionally, state governments have economic and social development objectives that rely on digital connectivity. At times, states have invested directly to address gaps where national approaches do not meet community and business needs.

Significant Commonwealth activity

The Commonwealth Government has demonstrated a strong commitment to improving regional telecommunications including responding to findings and recommendations from previous Regional Telecommunications Reviews. In recent years, the Commonwealth has also made significant investments in regional telecommunications through its 5-year *Better Connectivity Plan for Regional and Rural Australia*.

A substantial program of infrastructure investment including upgrades across the NBN network is underway, as well as further funding for the Regional Connectivity Program, improving mobile coverage on roads and improving resilience of telecommunications infrastructure. An audit of mobile coverage is also being undertaken to help inform future mobile connectivity priorities.

The Commonwealth Government has also progressed work on a range of policy and regulatory developments. This includes a commitment to pursue a new emergency roaming capability, development of a Telecommunications in New Developments policy that reflects the importance of mobile connectivity in planning decisions, and consultation on the existing Universal Service Obligation (USO) arrangements to consider ways to better deliver baseline universal telecommunications services.

From a digital inclusion perspective, the Commonwealth has extended the Be Connected program for older Australians, established the School Student Broadband Initiative and continued support for the Regional Tech Hub. The Commonwealth has also supported more action on First Nations digital inclusion including through the establishment of the First Nations Digital Inclusion Advisory Group, allocating infrastructure funding for First Nations communities and extending First Nations data collection.

Coordination and engagement with states and territories has also been strengthened through ministerial and senior level participation in interjurisdictional fora and stronger opportunities to provide local input to guide investment decisions in national telecommunications infrastructure programs. The Regional Connectivity Ministers Roundtable has provided a welcomed opportunity to engage State and Territories in a national approach to common connectivity challenges and create opportunities for collaboration.

Attachment B – Connectivity challenges

Key theme 1: Access gaps

The telecommunications landscape has changed dramatically over the last 15 years. Ongoing investment and technology developments mean that in Victoria most people will have access to the minimum services they need over the next few years. However, the least commercial areas are likely to miss out on equitable access and barriers to practical adoption such as affordability need to be the focus of future policy and programs.

The disparity in telecommunications service quality between metro and regional areas is a long-standing and significant issue, well known by government and regional stakeholders. The regional-metro digital divide is an ongoing source of frustration for regional communities and businesses that has driven a broad range of Commonwealth efforts to lift regional connectivity to an adequate standard. The Regional Telecommunications Review was legislated to provide independent oversight of regional telecommunications trends and issues recognising the need for a long-term approach.

While the digital divide persists, the challenge looks substantially different to what was contemplated during previous reviews. Notions of regional telecommunications adequacy formerly revolved around whether every premise was able to access a home phone service. In contrast, policy makers are now wrestling with questions about what types and standards of the various available telecommunications services should be considered a universal minimum requirement to participate in an increasingly digital world.

The problem of inadequate connectivity in Victoria is now less acute than it has been in the last 15 years. Technology evolution, industry and government investment, and regulatory and legislative policy have all contributed to progressive improvements across the telecommunications infrastructure landscape, with further improvements on the horizon. However, those that have missed out face more significant consequences of social and economic exclusion and reflect a largely dispersed cohort of users that are harder to identify and more costly to address.

Remaining gaps are likely to reflect the least commercially viable premises and locations and while new technology options are emerging there are important questions to resolve for what scope and standard of services people and communities should have access to and on what terms. The communities and premises left behind despite broad improvements to the technology landscape need to be the focus of future government policy and programs.

Industry investment and technology developments are improving services and closing gaps

NBN network upgrades

During 2019 and 2020, Victoria produced a set of 9 Regional Digital Plans, one for each of its Regional Partnerships. These plans reviewed the state of telecommunications infrastructure across Victoria at the time and rated services and infrastructure based on how well they could meet household, business and community needs. The digital plans identified that NBN Satellite, Fixed Wireless and Fibre-to-the-Node (FTTN) services were inadequate based on the speed and capacity of these services at the time.

In 2022, following the formal completion of the primary NBN network rollout and with support from the Commonwealth Government, NBN Co commenced a major program of network

upgrades. These upgrades, to be delivered by the end of 2025, will make substantial improvements to what have previously been considered inadequate service categories for many users, including improvements to Fixed Wireless and Satellite services for one million premises across Australia by December 2024.

Once complete, most parts of the NBN network will be capable of offering 100Mbps+ download speeds and unlimited data inclusions which can make a significant difference to regional households and businesses that previously could not access the speed and data allowances needed to effectively participate online.

5G network deployments

Alongside NBN's network upgrades, mobile carriers have been rolling out their 5G networks. As with previous mobile network deployments, these upgrades are also being focussed in the most densely populated and commercial locations first – meaning that regional, rural and remote areas may face delays or miss out on 5G network deployments. However, where deployed, these networks provide a competitive offering to NBN's network and can serve as a legitimate substitute for high-speed fixed internet services which may have influenced NBN's recently announced speed increases to its higher speed plans at no additional cost to retail service providers.

Low earth orbit satellites (LEO Sats)

The emergence of commercial LEO Sat services has the potential to deliver a step-change in connectivity solutions for many users that have historically been excluded from the wave of digital transformation and investment over the last 15 years. This technological development presents a potentially game-changing opportunity, particularly for premises that have struggled to access a high-speed fixed internet service and industry sectors such as agriculture and advanced manufacturing, which have potential for significant efficiency and productivity gains through adoption of new technologies.

At least one LEO Sat provider now shows ubiquitous availability of its services across the entire Australian landmass. These services are commensurate with terrestrial fixed-broadband services, albeit more costly, and have rapidly filled in the access gap for high-capacity fixed broadband services for premises previously unable to access the standard of service required.

Through the assistance of government capital subsidy programs, terrestrial mobile networks have managed to extend to approximately 33 per cent of the Australian landmass and cover most Australian premises. This footprint is approaching the practical limit of terrestrial mobile network coverage given the high cost and limited returns from new investment in areas not already covered.¹¹ This problem previously had limited prospects of being addressed unless the Commonwealth Government significantly increased its subsidy contribution towards new infrastructure. The emergence of LEO Sat services now offers an alternative pathway.

Although not yet available, the technology roadmap for LEO Sat services offers strong prospects of supporting LEO Sat-to-mobile services directly. Domestic carriers such as Optus and Telstra are already forming partnerships with LEO Sat providers to improve their regional mobile services. Such developments reduce the necessity for further expansion of the terrestrial mobile network, and if developed effectively could fill the gaps and provide a

¹¹ Noting that within the 33% existing coverage there are many places that want and need better mobile services because the quality and capacity of coverage is inadequate.

new mobile connectivity option especially for remote areas. Despite this promising opportunity, it is important that the Commonwealth Government does not shift too much reliance or responsibility onto these potential future services in lieu of measures needed to ensure existing services deliver affordable and adequate connectivity.

LEO Sat services introduce a new form of regional telecommunications competition that already appears to be driving beneficial outcomes for consumers. Their emergence also raises challenges and complexities, such as questions about what constitutes an affordable service, whether Mobile Virtual Network Operator (MVNO) customers are able to access Mobile Network Operator (MNO) equivalent LEO Sat coverage and how competing networks and services respond to this new competition (for example, mobile network operators might reduce investment in commercially unattractive areas if LEO Sat competition erodes investment incentives even further, causing mobile services to degrade over time and forcing consumers onto potentially more expensive services).

Government policy and investment has also been addressing access gaps

Alongside industry investment and technology developments, a significant amount of policy and program activity has been progressed in recent years to resolve connectivity gaps not addressed through competitive market provision. While effective, these efforts face inherent limitations in how far they can go because of the commercial basis on which these improvements have been made. These policies and programs include:

- **The National Broadband Network** – Implemented as an economic investment, the model relies on higher profitability in metropolitan and densely populated areas to subsidise the cost-of-service provision in marginal and less-commercial locations.
- **Mobile Black Spot Program (MBSP)** – The program recognises that government subsidies are required to extend regional telecommunications infrastructure provision further as commercial incentives can only go so far. The program has relied on mobile carriers putting forward proposals to expand their networks.
- **Peri-Urban Mobile Program (PUMP)** – The program relies on industry to put forward funding proposals for investments they are willing to make with subsidy.
- **Regional Connectivity Program (RCP)** – This program recognised declining participation in the MBSP approach and the need for a flexible funding program able to deliver different infrastructure solutions based on the community and geographic characteristics of different places. The program relies on industry to put forward funding proposals for investments they are willing to make with subsidy.
- **Better Connectivity Plan for Regional and Rural Australia** - In 2022, the Commonwealth Government consolidated its telecommunications infrastructure and support initiatives under the *Better Connectivity Plan for Regional and Rural Australia* and allocated funding, including new programs, in its 2022-23 Budget. The Commonwealth's Plan included NBN network upgrades, funding to improve mobile services along regional roads, continuation of RCP, further resilience funding, and an audit of mobile coverage.

Victoria has also funded standalone telecommunications programs including Connecting Victoria. This program is in its delivery phase through to 2026 and relied on industry to put forward funding proposals for investments they were willing to make with government subsidy and which aligned to areas where community had raised connectivity issues.

Understanding of gaps has evolved and needs new approaches

Through the investments outlined above, there have been substantial improvements to regional connectivity which will further improve in Victoria following the completion of the NBN network upgrades and the rollout of the Connecting Victoria program.

These are positive developments for many users, but for a portion of regional stakeholders the issue of inadequate connectivity has never been more frustrating as they have seen wide-ranging investment that has failed to improve services for them.

It has been appropriate for national policy and programs to focus on addressing the largest and most readily identifiable problems, trying to improve services for the most premises possible at the best value for money. However, more nuance and better data is now needed to resolve smaller aggregations of issues that have little prospect of been addressed through program models that rely on an industry investment appetite. These issues are likely to include:

- Premises in areas where industry will not invest even with subsidy, or where previously good services have declined in quality as network capacity limits are reached.
- Agricultural and other regional businesses in sparsely populated areas that have not been a focus of funding programs.
- Low-income households where higher cost LEO Sat services are the most technically appropriate but prohibitively expensive option to provide adequate connectivity.
- Premises on the boundaries of coverage zones that can lead to poor service quality, such as premises on the fringe of a fixed wireless or mobile network or areas with complex terrain.
- Premises in areas where network performance is poor, such as due to limited backhaul capacity.
- Urban growth areas, both regional and metropolitan, where mobile services in new developments are not guaranteed and do not keep pace with needs for essential coverage.
- Hard to connect premises to the NBN network.
- Areas that have relied on the 3G network for mobile connectivity, but which is lost when these networks are soon switched off.

A key requirement to address these issues is having a good understanding of their prevalence and locations. Commonwealth funding programs have been effective at inducing telecommunications providers to reveal where they are prepared to invest further into their networks with a subsidy, effectively confirming that network quality and capacity previously had issues that needed investment to fix. However, this approach does not reveal where their networks require investment that they are unwilling to make. In effect, we have no sense of how close or far we are from delivering an appropriate standard of service to all Australians.

The Commonwealth Government's Mobile Coverage Audit Project is an important initiative in this context. It may establish the best account to date of how public coverage maps of mobile networks accord with real-world experiences and will give a sense of where future investment needs to be targeted. This project needs to be the beginning of a broader program of work that can reveal where premises and communities are still missing out. The Commonwealth will need to use policy, program and regulatory levers to develop a strategy that can deal with these issues long-term.

There will still be a role for industry co-investment programs to improve services within the existing footprint and ensure they keep pace with continually increasing data requirements as well as support the equitable deployment of new waves of network technology (such as 5G and 6G mobile infrastructure in the future). Successive waves of technology development, particularly for mobile networks, have demonstrated that government action

to support equitable availability of new services in marginal and less economic areas is likely be a feature of the telecommunications landscape moving forward.

Key theme 2: Telecommunications resilience

Telecommunications resilience is increasingly important to communities and a major source of vulnerability and anxiety during natural disasters when there are outages. Better resilience outcomes require improved coordination and specific standards that will better meet community expectations.

Emergency events continue highlighting the importance of resilience

Telecommunications resilience is increasingly important to communities and a major source of anxiety and vulnerability during natural disasters when there are outages.

Telecommunications enable people to connect with information, people, and services - all of which are vital during emergency events.

The 2019-20 Black Summer Bushfires marked a significant juncture for community expectations for connectivity during emergency events. This was driven by the extent and duration of the fires and the prolonged impacts they had on power and, consequently, telecommunications. The fires highlighted the impacts of communities becoming isolated through road closures which was further compounded by loss of communications.

Since then, Victoria has experienced numerous natural disasters that have raised substantial community concerns regarding the loss of telecommunications during these events. These events have included:

- severe storm, power outage and bushfire event across Victoria in February 2024
- floods in central and northern Victoria in January 2024
- severe storm event in central Victoria in January 2024
- bushfires and floods in Gippsland in October 2023
- floods in central Victoria in October and November 2022
- floods in central Gippsland in April 2022
- severe storm event in October 2021
- storm and flood event in June 2021.

The importance of telecommunications resilience has also been demonstrated outside of natural disaster emergency events, such as during the Optus network outage that occurred on 8 November 2023. This outage impacted an estimated 10 million customers and 400,000 businesses across Australia and revealed limitations in telecommunications networks.

A range of resilience initiatives have been implemented but better coordination, strategic planning, and clear targets are required

There has been positive momentum from the Commonwealth Government around telecommunications network resilience since 2020, including through the Strengthening Telecommunications Against Natural Disasters (STAND) program, the Telecommunications Disaster Resilience Innovation program, the Disaster Ready Fund, and the Commonwealth's commitment to pursue an emergency mobile roaming solution following a feasibility assessment by the Australian Competition and Consumer Commission.

However, funding allocated to telecommunications resilience to date has been inadequate for the scale of investment needed to deliver a consistent outcome across high-risk locations and/or which are served by unreliable telecommunications or power infrastructure. While

providing important improvements, the programs delivered to date have been developed and implemented without an overarching strategy and clarity as to what resilience objectives are trying to be achieved.

For example, the STAND program delivered 343 NBN satellite community Wi-Fi services across Victoria that provide an alternative form of connectivity in case of outages on other networks during emergency events. Victorian local governments participated to identify suitable locations for these services and the program was well received by stakeholders. However, funding for these services under the program will expire in 2025 despite the value they provide and ongoing need for a resilient form of connectivity beyond this timeframe.

The STAND program also supported the extension of battery backup to 12 hours minimum on round 1 MBSP-funded telecommunications towers. While this is a worthy initiative, it has been limited to a relatively small portion of telecommunications towers and the experience of significant network outages suggests 12 hours backup is an inadequate resilience standard (see below).

Commonwealth Government programs have helped to improve understanding of resilience solutions and the relative pros and cons of different options. With this information and new power resilience solutions emerging, there is potential to deliver more robust resilience outcomes for at-risk communities. For example, in Victoria the delivery of hydrogen cell powered batteries are being trialled on telecommunications infrastructure in 5 locations. This technology can provide 72 hours of power supply.

A comprehensive approach is needed as part of a broader national connectivity strategy that sets the standards and objectives for resilient telecommunications and provides a roadmap for achieving these outcomes. This approach should include:

A target for telecommunications resilience when network power supply is lost

Electricity is a critical dependency of telecommunications infrastructure as demonstrated through repeated natural disasters across Victoria that have led to widespread loss of power and subsequently, telecommunications.

In response to these events, the Victorian Government established the *Network Outage Review*, which seeks to inquire into and make recommendations regarding operational response to extreme weather events.

The Network Outage Review Interim Report recommends that “Government and industry responsible for telecommunications services ensure that there are appropriate arrangements for continued provision of services for 72 hours without network power supply.”¹²

This target is based on recent events demonstrating that approximately 90 per cent of customers from a large-scale power outage are restored within 72 hours.¹³ While access for the remaining 10 per cent of customers is essential, an initial 72 hours of telecommunications service allows connectivity for most premises to be restored, while alternative solutions can be deployed for the more complex restoration activities, such as cells on wheels.

¹² <https://www.energy.vic.gov.au/safety/network-outage-review>, recommendation 14, pg35

¹³ <https://www.energy.vic.gov.au/safety/network-outage-review>, recommendation 14, pg35

Victoria suggests that the Commonwealth Government should adopt a community connectivity resilience target going forward which would provide a stronger focal point for network resilience policy and program activity.

In line with Victoria's submission to the 8 November Optus Outage Review, where there is an outage of a national scale, the Commonwealth Government should lead the development of shared messages to ensure a consistent public message coming from all levels of government. These messages would need to be developed and shared in a timely manner and updated regularly to reflect the status of the incident/emergency event.

Messaging to the community prior and during emergency events also needs to ensure that the dependency that telecommunications services have on power is well understood. This is necessary to ensure communities have time to prepare adequately for power outages that may impact their connectivity.

A national approach to sharing data that will support more effective responses and improve community safety during emergency events

Improving access to real-time data and coordination between federal and state agencies and the telecommunications sector has been identified as critical to response and recovery efforts. The Commonwealth Government should lead coordination with industry and state and territory governments during national outages.

Victoria considers that automation of information flows and the establishment of a common operating picture, led by the Commonwealth Government and shared across all levels of government would enable better coordination when emergency events occur.

NEMA's 2023-25 Data Strategy¹⁴ includes details about the Commonwealth's National Joint Common Operating Picture (NJCOP). Currently in development, the NJCOP has plans to provide a 'near-real-time' dashboard to depict all hazard incidents, and data on weather warnings, bushfire information and telecommunications outages¹⁵.

To be effective, this tool needs real-time, geospatial information provided by industry on telecommunications coverage and outages. This includes visualisation at a premise level for fixed line services and coverage area boundaries for mobile services. This data should be able to interface with state and territory systems to support emergency response planning and prioritisation. In Victoria, the relevant system is the Emergency Management Common Operating Procedure (EM COP).

Federated data sharing models, under which the Commonwealth Government has data sharing agreements with industry and provides access to other jurisdictions by agreement with the Commonwealth, would support better access to relevant information while minimising the administrative burden on industry through a coordinated sharing arrangement.

The Commonwealth Government should also investigate providing clarity on complaints processes for the public and ensuring that complaints data is shared with relevant state and territory government agencies. The Commonwealth Government should also investigate a mechanism for this data to be shared with states and territories.

¹⁴ National Emergency Management Agency, 2023, Data Strategy 2023-25, viewed 31 July 2024-
<https://nema.gov.au/sites/default/files/in line - files/National%20Emergency%20Management%20Agency%20Data%20Strategy%202023-25.pdf>

¹⁵ Ibid, p.13

Victoria has previously advocated for the above, and some recommendations from the Review into the 8 November 2024 Optus Outage are relevant:

- **Recommendation 5:** Require carriers, through a standard or determination, to share real time network information detailing outages with relevant emergency services organisations and other appropriate entities, including the body referred to in Recommendation 2.
- **Recommendation 9:** The Protocol for Notification of Major Service Disruptions (the Protocol) should be improved and augmented with clear and detailed requirements for Government communication and collaboration during telecommunications outages through a central coordination point in Government. This should cover communication and collaboration with carriers, relevant Ministers, Commonwealth, state and territory government agencies, TIO, the Australian Consumer and Competition Commission (ACCC), ACMA, Emergency Service Organisations (ESOs) and other relevant parties. The Protocol should also be closely aligned with the Australian Government Crisis Management Framework (AGCMF) and the National Coordination Mechanism (NCM).

The Commonwealth Government has committed to implementing these recommendations. It is critical that states and territories are involved in the design and delivery to ensure the identified gaps are addressed. Further work from the Commonwealth Government is sought on addressing important considerations not covered in these recommendations, such as NJCOP implementation, federated data sharing and management of complaints data.

Through Victorian post-incident reviews, the telecommunications industry has identified a need for consistency of reporting requirements across jurisdictions. This would allow governments to better understand impacts on the community, including impacts to Triple Zero access. Consistent reporting arrangements would also support government, telecommunications industry and power providers to prioritise and coordinate restoration activities; a process largely undertaken manually at present with incomplete and incomparable data.

Better coordination between national telecommunications carriers and state-based power companies

Telecommunications network providers need better planning and industry coordination to prevent services from failing during power outages, and to support more effective response and restoration of telecommunications services when they do fail.

Victoria's Network Outage Review Interim Report recommends:

- "Telecommunication network providers to share - and keep current - information about their sites to enable more effective planning with distribution businesses and a faster emergency response."¹⁶
- "Enhanc[ing] existing critical infrastructure forums to support coordinated emergency management planning and exercising by distribution businesses and critical infrastructure providers."¹⁷

Whilst energy is primarily a state government matter, the Commonwealth can play a crucial role in strengthening telecommunications infrastructure resilience against power outages. This could include facilitating better data provision on telecommunications network status

¹⁶ <https://www.energy.vic.gov.au/safety/network-outage-review>, recommendation 15, pg35

¹⁷ <https://www.energy.vic.gov.au/safety/network-outage-review>, recommendation 16, pg36

to support electricity restoration efforts and scoping programs to fund improvements to energy network resilience that also improve telecommunications resilience.

There are also opportunities to better coordinate resource allocations during emergency events to minimise disruptions on communities and based on ensuring at least one telecommunications network remains operational wherever possible.

For example, this might mean telecommunications and energy providers coordinating their local resources and technicians to prioritise restoration efforts to prioritise keeping at least one telecommunications network operational, rather than all working on their own priorities which may lead to all networks being unavailable for longer.

Another situation may be an energy company prioritising restoration of one part of its network first because it will ensure critical telecommunications infrastructure is restored sooner. These kinds of resource prioritisation decisions cannot be made readily during an emergency event without better coordination and data sharing arrangements being in place beforehand.

Key theme 3: Digital inclusion

With telecommunications connectivity gaps being resolved for most Australians, a stronger focus on other barriers keeping people offline including affordability and connectivity literacy is needed.

Some cohorts face greater barriers to accessing and using technology

The Victorian Government uses the ADII digital inclusion framework which measures digital inclusion across the three core dimensions of Access, Affordability and Digital Ability. These dimensions, plus digital safety, form the basis of the *Victorian Government Digital Inclusion Statement* released in October 2022¹⁸. The Statement provides an overview of Victorian Government initiatives aimed at addressing the barriers to digital inclusion.

There is a strong and consistent evidence-base captured in the ADII which reveals that, in addition to the metro-regional digital divide, the most digitally excluded cohorts of Australians also tend to be people who experience other forms of vulnerability and disadvantage. These findings have been confirmed for Victoria through dedicated state-focused research, providing an in-depth analysis of Victoria's digital inclusion trends¹⁹.

Consistent with the national results, the Victorian analysis shows that metro-regional dynamics continue to influence digital inclusion, with a steady decline in digital inclusion as you move away from major cities to inner and outer regional areas. Whilst many Victorian local government areas (LGAs) show improvement in their Access scores over time, 44 Victorian LGAs remain below the national average for Access – almost all in regional areas. The analysis also shows that 22.9% of Victorians experience 'affordability stress' and that the most digitally excluded Victorian cohorts align with digitally excluded cohorts at the national

¹⁸ Victorian Government Digital Inclusion Statement (October 2023) <https://www.vic.gov.au/victorian-government-digital-inclusion-statement>

¹⁹ Hegarty, K., Parkinson, S., Thomas, J., McCosker, A. & Featherstone, D. (2024, January). *Digital inclusion in Victoria: Analysis of the Australian Digital Inclusion Index data released in 2023*. Melbourne: ARC Centre of Excellence for Automated Decision-Making and Society, Swinburne University of Technology and RMIT University. Unpublished

level. Whilst First Nations people are identified at the national level as a digitally excluded cohort through substantial work under the Mapping the Digital Gap project, the ADII data does not enable state-based commentary on First Nations digital inclusion due to insufficient representation in the survey results.

Given the intersection between the regional digital divide and other forms of vulnerability, digital inclusion barriers can be complex to solve and can be expected to require a sustained and coordinated response across multiple stakeholders. In addition, the preferences and needs of specific sub-groups are diverse and unlikely to benefit from a one-size-fits-all response.

There is growing recognition that other barriers beyond access issues need to be addressed

Since the COVID-19 pandemic, government, industry and community stakeholders have become more aware of the importance of digital inclusion, particularly for enabling disadvantaged and vulnerable cohorts to share in the social and economic benefits of rapid digitalisation.

Community needs support to access or transition to online services. Up to 50% of support requests relate to government services. (Wangaratta Digital Hub Strategy & Action Plan, Nov. 2023. Unpublished)

With a strong focus on connectivity and access over recent decades, and heightened awareness of the impact of digital exclusion during the COVID-19 pandemic, there is now increasing attention being paid to affordability and digital ability barriers as reflected across a variety of activities, including:

- Establishment of the Low-Income and Digital Inclusion Forum (LIDIF) by NBN Co responding to more explicit direction from the Commonwealth Government to consider digital inclusion in its priorities.
- New Commonwealth Government investment in programs targeting affordability and digital ability barriers, including recent budget commitments for Be Connected (\$42 million), Regional Tech Hub (\$6 million), initiatives targeting barriers for First Nations communities (\$68 million), and the School Student Broadband Initiative.
- Delivery of specific state government initiatives such as free public WiFi networks, as well as Victoria, Western Australia and New South Wales having developed, or being in the process of developing, specific digital inclusion statements / strategies.

Despite data showing consistent improvement in digital inclusion access, ability and digital ability scores at the national and state level, 1 in 4 Australians and 1 in 5 Victorians continue to experience digital exclusion.

Affordability barriers are increasingly relevant

Affordability is a clear and ongoing problem – with access significantly improved by investment in telecommunications infrastructure over recent decades and new technology developments, affordability has emerged as a significant barrier that requires action.

Affordability barriers drive many low-income households to rely on cheaper and lower quality services and devices, including mobile-only connections which are associated with 'data poverty' due to restricted mobile data limits and relatively high-cost data inclusions.

The Victorian ADII analysis shows that 22.9% of Victorians experience digital affordability stress.

Affordability barriers are relatively straightforward to understand, with low-income households clearly the most impacted and therefore most easily reached through targeted initiatives. For example, the ADII research shows that 64.1% of Australians living in public housing experience digital affordability stress. Whilst initiatives exist to address affordability barriers, they are not sufficient nor well-enough coordinated to meet the contemporary digital needs of the disadvantaged and vulnerable community members they are designed to support.

A range of mechanisms could be better utilised and coordinated to deliver a comprehensive approach to reducing affordability barriers, including:

- Updating the Commonwealth Telephone Allowance
- Fostering NGO, government and industry device donation, refurbishment and distribution programs
- Establishment of suitable low-income mobile and broadband services in the market for eligible customers
- Delivering free public Wi-Fi networks
- Targeted Commonwealth Government subsidy programs for services and devices for disadvantaged cohorts including low-income households with school students and First Nations people.

It is important that connection, device and data affordability initiatives are linked with other wrap-around support services, such as technical advisors to assist with set-up and troubleshooting, and mentors to build confidence, provide guidance and build skills.

Australia also needs a robust framework to ensure affordable access to telecommunications services, such as a modern universal service framework that acknowledges affordability as a central element of equitable access.

Connectivity literacy needs critical attention

Connectivity literacy is considered here as a component of the broader digital ability dimension that is closely linked to access. Technology developments and forthcoming upgrades mean virtually all premises in Victoria should be able to access at least one high-capacity data service, even if they cannot access all their preferred services to the desired standard. However, stakeholder engagement and consistent advocacy from Victorians suggests awareness of these expanding options is limited, particularly in poorer served regional areas.

Examples of awareness gaps that may be limiting regional stakeholder access to the services they need include:

- LEO Sat services could offer a high-quality alternative to a poor-quality terrestrial network service.
- Wi-Fi calling over NBN fixed broadband and LEO Sat networks can be used to enable mobile connectivity inside the home.
- More suitable 'business plans', not offered by their current retail provider, are available from other providers, resulting in reliance on poorer quality 'residential plans' – a particular issue for many small and medium enterprises in regional areas who have limited understanding of available options.
- Higher-speed NBN options have been activated in their area and can now be accessed.

In contrast to digital exclusion trends, people of all ages and from all backgrounds, whether highly educated, high income, or living in urban areas can have low levels of connectivity literacy which leads to sub-optimal access to digital services.

Connectivity literacy, as part of the broader digital ability pillar, is an important barrier to address for regional residents, particularly those in older age groups facing decreasing mobility, incomes and loss of bricks-and-mortar services. Anecdotal evidence indicates that the increasing digitisation of government services, growth of telehealth and eHealth services and closure of regional bank branches is particularly impacting this cohort. This includes older people who previously considered themselves to be digitally capable and now feel they are losing confidence and are no longer able to keep up with the pace of technological change.

The Regional Tech Hub, First Nations Digital Support Hub (not yet operational) and a small number of local community digital hubs in regional Victoria have a key role in addressing connectivity literacy needs and troubleshooting individual connectivity problems. However, they are not widely known (or available in the case of community digital hubs). More needs to be done to raise awareness of available support options and use the experience of these support services to develop more useful guidance to help people explore and choose the right connectivity options.

First Nations digital inclusion is a national priority

First Nations digital inclusion is an important priority that has seen significantly greater government attention in recent years driven by the Closing the Gap Target 17 which aims to achieve equal levels of digital inclusion for First Nations people by 2026.

Recent Commonwealth Government and related efforts include:

- Establishing the First Nations Digital Inclusion Advisory Group (FNDIAG) which has since produced its initial report to government and undertaken a consultation process on a First Nations digital inclusion roadmap.
- Launching the *First Nations Digital Inclusion Plan 2023-26*.
- Convening ministerial and senior officials forums to consider First Nations digital inclusion issues and actions in the context of broader telecommunications and data priorities.
- Providing dedicated funding for telecommunications infrastructure for First Nations communities in recent program funding rounds²⁰
- Allocating \$68 million for new First Nations digital inclusion initiatives in the recent Commonwealth 2024-25 budget.

These developments are welcome and represent significant progress at the national level, noting achieving the desired outcomes is an effort that will require sustained policy and program activity over years.

Whilst digital inclusion barriers are the most acute in remote communities (of which there are none in Victoria), significant barriers also exist for First Nations people residing in rural, regional and urban locations. As with other jurisdictions, Victoria's First Nations communities are distributed across metro, regional, and rural areas, with relatively large representation in the LGAs of Greater Geelong, Greater Bendigo and Greater Shepparton²¹. Victoria also has two regionally located Aboriginal Trust communities – Framlingham in southwest Victoria,

²⁰ Regional Connectivity Program (Round 3) and Mobile Black Spot Program (Round 7)

²¹ Australian Bureau of Statistics – Victoria: Aboriginal and Torres Strait Islander population summary (ABS 2021)
<https://www.abs.gov.au/articles/victoria-aboriginal-and-torres-strait-islander-population-summary>

and Lake Tyers in southeast Victoria – both being in high bushfire risk zones and reporting issues with the quality of their mobile and broadband connectivity.

The Mapping the Digital Gap project undertaken by the ADII research team, has significantly contributed to knowledge about digital inclusion in remote First Nations communities across Australia²². Despite progress in better understanding the extent and nature of the digital gap, blind spots remain, with digital inclusion data for the 68% of First Nations people living in urban and regional Australia being limited. For this reason, Victoria welcomed the Commonwealth Government’s recent budget commitment to expand the scope of the ADII data collections to ensure better representation from First Nations people across non-remote community settings. The findings of this work will be an important contributor to future policy and program development.

Victoria is committed to supporting a national approach to digital inclusion for First Nations people and supports consideration of First Nations telecommunications and digital inclusion issues through this review. This includes actions to improve digital inclusion for remote communities which face the most significant digital inclusion gaps, and affordability and digital ability measures that remove other barriers.

Victoria considers the most influential way to meet the needs of First Nations communities is to set appropriate standards and targets for digital access, including affordability, and then focussing future policy and program activity to meet these objectives. Without a clear objective as to what an adequately connected individual, household and community looks like, it is difficult for stakeholders and communities to advocate on their needs and for governments to monitor and track progress over time.

The actions outlined in this submission are put forward as measures that can deliver meaningful improvement to First Nations people and communities across Australia if implemented under an appropriate framework that determines the level of affordable connectivity every person, household and community should have access to.

²² Mapping the Digital Gap: 2023 Outcomes Report <https://apo.org.au>

Attachment C - Connectivity standards

The most effective way to plan around Australia's regional telecommunications priorities is to clarify and modernise expectations around what standards of connectivity everyone should be able to access and on what terms.

The Commonwealth Government has recently undertaken a review of Australia's Universal Service Obligation regime. Victoria understands that the findings of that review in conjunction with the findings of this 2024 Regional Telecommunications Review will be used to inform potential changes to the universal services framework. Victoria supports this priority and considers it an important time to modernise our conception of what an adequate standard of connectivity looks like for all.

A universal services framework needs to answer the question 'what does it mean to be adequately connected?' The answer should focus on clear standards of connectivity and affordability that enable meaningful participation online. With standards articulated, a strategy can be developed for how such standards and outcomes will be achieved where it is not currently the case. This is a fundamental piece missing from Australia's telecommunications policy and program activity that makes it difficult to monitor progress over time.

The sections below contemplate connectivity requirements from different user perspectives according to three suggested standards as either *universal* (i.e. a basic minimum), *adequate* or *good*, and provides potential framing for a future national approach.

- **Universal:** mandates a minimum standard for must-have services that are practically achievable across the nation.
- **Adequate:** defines a standard of services that should be available to all Australians but may require targeted policy and program activity to overcome market failure or other barriers. This standard should be a primary responsibility for the Commonwealth Government achieve on a national basis over time.
- **Good:** defines connectivity benchmarks that are generally delivered by the nationally regulated competitive telecommunications industry in commercially attractive markets - these areas provide the opportunity for technology and service innovation by our telecommunications providers which can ultimately lead the way to lifting standards in other areas.

Outside the home

'Universal' standard

Connectivity outside the home relates to the minimum mobile connectivity standards all consumers should be able to access. An appropriate basic minimum standard could focus on public safety and the ability to access Triple Zero emergency assistance wherever a network is available (noting the emergence of LEO Sat-to-mobile services could provide blanket coverage in future).

As previously outlined, there are growing expectations that people can access emergency assistance whenever and wherever they are. To date, people have been able to use any available mobile network to make a Triple Zero emergency call which recognises that access to help in these situations is more important than network customer membership. This is a standard of connectivity already provided by current settings.

There is also potential to expand access beyond Triple Zero to 'emergency mobile roaming' as a universal minimum expectation outside the home. This would enable people to use calls and data via any available mobile network during times of emergency, rather than just Triple Zero. Pursuing this capability recognises that safety and security during an emergency is about more than just accessing Triple Zero. It also relies on being able to contact family, friends and community members and access vital information to stay up to date with what is happening.

The Commonwealth Government has committed to pursuing such a solution following a formal feasibility assessment by the ACCC which determined it would be technically feasible to implement. Victoria supports this work and considers an emergency mobile roaming capability to be an important development to support public safety during times of emergency.

The emergence of LEO Sat services, and the prospects of LEO Sat-to-mobile capabilities presents a further potential development in what could be considered a universal minimum for public safety outside the home. LEO Sats could fill in the gaps in terrestrial mobile networks and enable access to emergency services wherever you are in Australia.

Victoria proposes that if such a capability emerges, it should be contemplated for inclusion as a universal standard so people can access Triple Zero wherever they are in Australia using their mobile phone. These capabilities are already emerging in the market, such as the Apple watch's ability to contact emergency services via satellite connection. While this policy could arguably be carried over from current mobile carrier obligations, it is important to proactively declare this a national policy objective so mobile industry and governments are able to participate early in planning for this capability.

In the not-so-distant future, it could be possible for anyone with a functioning mobile phone to access emergency help no matter the status of terrestrial mobile and broadband networks. This would be an important development for many regional stakeholders who often find themselves working or travelling in areas with no mobile coverage.

'Adequate' standard

An 'adequate' standard of connectivity outside the home would reflect good coverage of at least one mobile network operator (MNO) where someone lives and works. This is a standard that could be set as a national policy target with better data collected (including through the Commonwealth's National Audit of Mobile Coverage) to identify communities and areas where this 'adequate standard' is not being met to prioritise future investment.

Appropriate criteria would need to be set for the types of areas that should be considered within scope for connectivity outside the home. Generally, this would relate to areas where there is a significant amount of daily visitation. Appropriate criteria would also be needed as to what constitutes good mobile network coverage in terms of speed, capacity and reliability, and can incorporate LEO Sat-mobile solutions. With LEO Sat solutions reducing the need for Commonwealth capital subsidy programs it is possible that per-customer subsidies will enable individuals to be connected where affordability is a barrier.

'Good' standard

A good standard of connectivity outside the home would be where multiple MNOs provide high-quality 4G or better coverage in all the places a person tends to move and visit. This occurs for most people through competitive market forces in more densely populated areas.

It has been achieved for others through government co-investment programs that have delivered competitive coverage to new areas.

The potential evolution of LEO Sat-mobile services could substantially improve access to good quality mobile connectivity for regional stakeholders where it has historically been too non-commercial to attract adequate investment. There might be scenarios where government makes this standard of connectivity available for specific reasons, such as a subsidised service for emergency purposes, in remote communities, to drive economic outcomes (e.g. for the agricultural sector) or for low-income households.

Inside the home

Universal standard

The focus of a future Universal Service Obligation (USO) regime should be to ensure every household/ premise is able to access at least one high-quality, affordable internet service that also supports telephony. This could be through an NBN service, a mobile network, or a LEO Sat service. If the service enables equitable access to online activities, it would be acceptable.

That is to say, the USO regime should focus more on the functionality and reliability that connectivity aims to enable with less emphasis on legacy infrastructure. Functionality that all Australian premises should be able to access on reasonable terms should include:

- Working from home – adequate connectivity to support emails, calls, videoconferencing, using cloud applications etc.
- Studying at home – adequate connectivity to download course materials, search the internet, download and upload documents, stream content.
- Government services – adequate connectivity to access online government services.
- Health – adequate connectivity to support telehealth consultations.

The current Universal Service Guarantee (USG), which incorporates the long-standing USO, has provisions that set a minimum standard of connectivity but needs to be updated to reflect modern connectivity requirements. The current USG provisions guarantee all households access to a fixed home phone service. They also require that wholesale Statutory Infrastructure Providers offer a service to retailers capable of delivering at least 25/5 Mbps peak speeds to customers. The USO/USG regime does not include mobile services, nor does it guarantee any minimum broadband performance standards, speeds or costs for retail services.

Introducing performance standards into the USO regime is important to provide a basis for determining when a premise's services are not delivering the necessary minimum to support effective online participation.

Another important element for consideration in a revised USO regime is affordability. Universal access should also mean access on broadly equitable terms. If low-income households cannot afford the service required to have a basic minimum level of connectivity, then in practice the system does not support universal access.

There is a longer-term educational aspect to this also regarding connectivity literacy, particularly in areas where households tend to experience service issues that could be improved or resolved through alternative services. A better understanding of the options available may be the most appropriate form of support for many regional stakeholders experiencing poor service quality.

Adequate standard

An adequate standard of connectivity inside the home would involve being able to access both a mobile service and fixed broadband service. A mobile service should provide 4G or better with strong signal strength and network capacity while an adequate broadband service would be a minimum of 50/20 Mbps.

The universal minimum ensures that every premise can access at least one useful service that can meet the premise's telephony and data needs. The adequate standard reflects the widespread community expectation that premises can access both mobile and broadband services reliably.

Again, such a standard for 'adequate' connectivity in the home can provide a strong foundation from which future policy and programs target future investment. Better data would be needed to determine where households are only able to access one of these services and focus on addressing the gap.

Commonwealth investment programs like the Regional Connectivity Program, Peri-Urban Mobile Program and Mobile Black Spot Program and Victoria's own Connecting Victoria program have been valuable in lifting more premises to the adequate and good connectivity standards so that premises have access to multiple high-quality connectivity options competitively provided.

Good standard

A good standard of connectivity inside the home would be demonstrated through the availability of multiple competitive home internet services as well as good quality indoor mobile coverage (4G or better) from multiple MNOs.

Programs that lift communities beyond a basic minimum standard are important because regional stakeholders experience significant frustration if the types of digital services demanded are not available at an appropriate standard. For example, the Victorian Government receives frequent community advocacy about poor mobile phone reception inside the home regardless of whether they can access a good home internet service (which could be used to enable WiFi calling inside the home and address the poor indoor mobile network coverage).

Australia needs an appropriate strategy that is both lifting communities and premises to a modern universal minimum standard of connectivity, while also supporting more communities to access higher standards of connectivity.

Business and organisation connectivity

The connectivity needs of businesses and organisations are different to individuals and households but important to the growth and competitiveness of regions. Businesses in regional, rural and remote areas are more likely to face digital access challenges posed by the digital divide.

While varying widely across industries and organisations, generally the connectivity needs of businesses and organisations are higher than households in terms of service coverage, speed, capacity or reliability. The consequences of poor connectivity can also be more significant in terms of the impacts on day-to-day activity and viability of the business. Examples of the variability in business' digital needs across regions include:

- Tourism and visitor economy businesses operating during busy periods of visitation.
- Advanced manufacturers staying connected with supply chains and customers.

- Knowledge industry businesses undertaking videoconferencing and large file uploads and downloads.
- Government and other organisations like hospitals, local councils, government offices and schools delivering essential services in regional areas.
- Agricultural businesses utilising digital tools and applications to manage the farm.

The needs of regional businesses located in large population centres are likely to be well catered for as with households in these areas. However, on the fringes of regional cities and towns and in sparsely populated areas such as agricultural zones it is less likely businesses can access the full range of digital services they need at the standard they require.

There is currently no consideration of business and organisational needs within the universal services framework. This is understandable as the framework is focussed on ensuring a basic standard of inclusivity for all Australians in contrast to the needs of businesses and organisations which are more relevant to economic development policy. On this basis, a relevant minimum standard for businesses would be to have access to reliable standard mobile and broadband services that enable basic business functionality e.g. payment processing, web, email. These essential capabilities are critical during emergencies when local businesses play a vital role in supporting their community and mitigating the economic impact of natural disasters.

Most regional businesses would benefit from a national approach that set universal standards to meet basic customer needs by ensuring premises also have an 'adequate' or 'good' standard of connectivity. For most small businesses, services of 50/20 to 100Mbps/40Mbps are likely to be sufficient. This should be available across most of the NBN network at the completion of its network upgrade program.

For businesses and organisations requiring more bespoke connectivity solutions (such as IoT networks for agriculture, 5G for advanced manufacturing, or symmetrical gigabit for larger businesses), there may be needs that could feasibly be addressed through place-based investment programs aimed at fostering economic development, such as the Commonwealth Government's Regional Connectivity Program.

Better information can also be a powerful tool in supporting regional business and organisation connectivity. As with consumers, it is difficult for businesses to know clearly in advance the quality of connectivity infrastructure in locations they are considering setting up in (or buying a business in). More informative and reliable public connectivity data could support more informed business investment decisions.

Community connectivity

The community perspective of connectivity relates to the importance of a resilient and affordable alternative service being available that community members can access when needed, such as during natural disasters or if connectivity at home is inadequate or unavailable for an extended period.

The community perspective also introduces the broader telecommunications landscape that is serving a community. For example, communities served by only one mobile network operator at the fringe of the network boundary, and who can only access NBN satellite services or expensive LEO Sat services reflect an inadequate community connectivity picture.

On the other hand, communities that have a competitive mobile market with 2 or more providers both offering good quality 4G and 5G services (or access to an alternative resilient public WiFi service), along with access to fixed-line NBN technologies would reflect a well-connected community.

Considering the state of community connectivity can be useful in articulating the relative priority for further investment and other supports.

Goals that could be set for community connectivity could include:

- **Resilient connectivity** - Access to a free and resilient (i.e. delivered over an alternative network or powered by a separate energy source to other services) telecommunications service to operate for a defined duration if normal telecommunications and power networks experience outages. This could be a free public WiFi network, a payphone with free WiFi enabled or an NBN Satellite Community WiFi service such as those provided through the Strengthening Telecommunications Against Natural Disasters (STAND) program with suitable power backup. As outlined earlier, innovations in the market now can provide 72+ hour power backup solutions.
- **Quality mobile service** - Availability of at least two 4G-standard mobile networks situated either on their own or on shared infrastructure providing good indoor coverage quality, or in more marginal locations, good coverage of 4G-standard services from at least one MNO.
- **Affordable access and support** - A place where digitally excluded community members can access devices, digital services and support to undertake key activities online such as telehealth, accessing government services, online banking etc. These could be public libraries, community halls, or relevant community organisations.

These outcomes do not need further government policy intervention for most Australians as they are already provided for by the market or live in areas with low risk of extended loss of power and communications. However, for communities underserved by existing infrastructure, which largely relates to regional, rural and remote communities, then objectives such as these can provide a useful framing to guide future interventions and investment priorities.

Summary of connectivity standards

Table 1 Overview of potential minimum and aspirational connectivity standards from different perspectives

	Current universal standard	Proposed universal standard <i>Legislated minimums</i>	Adequate standard <i>Policy and program target</i>	Good standard <i>Primarily market-led</i>
Outside the home	Ability to call Triple Zero on any available mobile network.	<p>Access to any network during an emergency to find information and contact people i.e. emergency mobile roaming.</p> <p>Ability to call Triple Zero anywhere in Australia if enabled by LEO Sat capabilities (future target).</p>	Good quality 4G-standard mobile connectivity from at least one MNO where people spend most of their time.	Multiple MNOs provide high-quality 4G or better coverage in all the places a person tends to move and visit.
Inside the home	<p>USO access to a fixed home phone service.</p> <p>USG requirement that RSPs can access a wholesale service capable of delivering at least 25/5 Mbps peak speeds.</p>	Access to an affordable and reliable data service that supports telephony of minimum 25/5 Mbps (real-world performance).	<p>Access to an affordable and reliable home internet service of minimum 50/20 Mbps.</p> <p>Good quality 4G-standard mobile connectivity from at least one MNO year-round.</p>	<p>Availability of good quality 4G and 5G mobile services from at least 2 MNOs year-round.</p> <p>Competitive provision of fixed-home internet services at least 100/40 Mbps download / upload speeds.</p>
Businesses	No minimum standard objectives.	No legislated minimum proposed, but business premises to benefit from the same standards for 'inside the home' with a reliable data service that supports telephony of minimum 25/5 Mbps (real-world performance).	<p>High-speed, reliable fixed broadband connectivity offering at least 100/20 Mbps speeds.</p> <p>Competitive provision of industry specific connectivity such as 5G or low bandwidth IoT networks.</p>	Fibre and mobile network infrastructure that supports gigabit symmetrical speeds, 5G mobile services, and networks for IoT applications.
Communities	No minimum standard objectives.	No legislated minimum proposed.	<p>Good quality coverage from at least one MNO where people live and work.</p> <p>Access to a resilient form of connectivity that can last for a defined duration during an emergency event.</p>	<p>High quality NBN services available with a competitive retail market.</p> <p>Competitive coverage from at least two MNOs.</p> <p>Communal areas where people can access a good quality and free internet connection.</p>