

Australian Competition and Consumer Commission

**Telstra and TPG application for merger authorization
for proposed spectrum sharing in regional Australia
Lodged 23 May 2022**

Submission by

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Amended 1 July 2022

Executive summary

The Australian Competition and Consumer Commission (ACCC) received an application for merger approval from Telstra Corporation Limited and TPG Telecom Limited on 23 May 2022 related to three interrelated agreements that would put in place a Multi-Operator Core Network (MOCN) arrangement. The three agreements include a MOCN Service Agreement, a Spectrum Authorisation Agreement, and a Mobile Site Transition Agreement. This paper considers the proposed arrangements, identifies that the ACCC's failure to declare domestic mobile roaming in 2018 was, in some large part, responsible for the market environment that fostered the current proposal and that the proposed arrangements are not a satisfactory mechanism to fundamentally improve the delivery of reasonably priced, open and competitive, reliable, and high quality mobile telecommunications in regional and remote areas.

Submission

This submission is made by way of two attachments. The first is a paper written to respond to the ACCC's request for submissions is titled 'Regional Mobile Telecommunications Access, Competition and Public Benefits' (Gregory, 2022) and the second is a paper titled 'Regional Mobile Telecommunications Performance' (Gregory, 2021). The papers are attached.

Attachments

Gregory, M. A. (2021). Regional Mobile Telecommunications Performance. *Journal of Telecommunications and the Digital Economy*, 9(3), 170–185. <https://doi.org/10.18080/jtde.v9n3.444>

Gregory, M. A. (2022). Regional Mobile Telecommunications Access, Competition and Public Benefits. *Journal of Telecommunications and the Digital Economy*, 10(2), 297–309. <https://doi.org/10.18080/jtde.v10n2.595>

Regional Mobile Telecommunications Access, Competition and Public Benefits

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Abstract: The Australian Competition and Consumer Commission (ACCC) received an application for merger approval from Telstra Corporation Limited and TPG Telecom Limited related to three interrelated agreements that would put in place a Multi-Operator Core Network (MOCN) arrangement. The three agreements include a MOCN Service Agreement, a Spectrum Authorisation Agreement, and a Mobile Site Transition Agreement. This paper considers the proposed arrangements, identifies that the ACCC's failure to declare domestic mobile roaming in 2018 was, in some large part, responsible for the market environment that fostered the current proposal, and that the proposed arrangements are not a satisfactory mechanism to fundamentally improve the delivery of reasonably priced, open and competitive, reliable, and high-quality mobile telecommunications in regional and remote areas.

Keywords: Mobile, Telecommunications, Australia, Telstra, ACCC

Introduction

Telstra Corporation Limited (Telstra) and TPG Telecom Limited (TPG) lodged a merger application with the Australian Competition and Consumer Commission (ACCC) on 23 May 2022 ([ACCC, 2022](#)).

The application for merger authorisation covers three interrelated agreements related to a Multi-Operator Core Network (MOCN) commercial arrangement. The arrangement includes a MOCN Service Agreement, a Spectrum Authorisation Agreement and a Mobile Site Transition Agreement.

Under existing rules, the ACCC is required to publish a decision on the merger application within 90 days of the lodgement date. An extension can be requested by the ACCC. The applicants have agreed to an extension request from the ACCC. The ACCC now has until 17 October 2022 to decide on the application.

The ACCC has invited submissions on the MOCN commercial arrangement. The submissions are to be considered in the authorisation process.

The Applicants seek to establish an arrangement for Telstra to use spectrum currently held by TPG, Telstra providing TPG with network services in selected regional and urban fringe areas (the Regional Coverage Zone), and for TPG to transfer ownership of up to 169 existing mobile sites in the Regional Coverage Zone to Telstra. TPG will use the MOCN commercial arrangement to offer 4G and 5G retail and wholesale services and to decommission mobile sites no longer required in the Regional Coverage Zone. The MOCN service agreement would have an initial term of 10 years, with an option for TPG to extend the agreement twice with five-year extensions.

This paper considers the proposed MOCN commercial arrangement between Telstra and TPG (the Applicants).

Background

The Australian mobile telecommunications market has evolved since telecommunications deregulation commenced in 1997. Today, there are three dominant carriers in the Australian mobile telecommunications market: Telstra, Optus and TPG. In addition, there are a number of smaller operators and Mobile Virtual Network Operators (MVNO).

Regional mobile telecommunications is dominated by Telstra due to its history and generous local, State and Commonwealth government grants over the past decades that have provided assistance to Telstra to build out its regional telecommunications network.

In 2014, after consultation with the telecommunications industry, the federal government introduced a Mobile Black Spot Programme ([DITRDC, 2022](#)) to provide mobile network operators and network infrastructure providers with co-funding for new infrastructure in selected areas. To date, this program has generated a total investment of more than \$875 million delivering more than 1,270 new mobile base stations across Australia.

Most of the Mobile Blackspot Programme funding has been allocated to Telstra due to its position in the market and other factors, including the fact that it is the only network provider in large areas of regional and remote Australia and, in many locations, the only carrier with access to regional backhaul capacity.

In an earlier paper ([Gregory, 2021](#)), regional mobile telecommunications was discussed with a focus on performance and, in particular, throughput (capacity). The paper also provides a background discussion on issues affecting regional mobile telecommunications. One important issue was the ACCC's decision to not declare domestic mobile roaming in 2018 after a public inquiry was completed.

Domestic mobile roaming declaration

The MOCN service agreement between Telstra and TPG is a logical and pragmatic outcome of the flawed decision by the ACCC to not declare domestic mobile roaming in 2018. The failure of the ACCC ([Gregory, 2021](#)) to acknowledge and understand that new competitive infrastructure would not eventuate in large areas of regional and remote Australia underpins the rationale for TPG to seek to put in place a service arrangement with Telstra.

In the years after the ACCC's domestic mobile roaming inquiry, the disparity between the Telstra regional mobile telecommunications network and the competitor networks appears to have increased ([Telstra, 2021a](#)), and Telstra has attracted most of the Mobile Black Spot funding from the Commonwealth and State governments ([Telstra, 2021b](#)). Consequently, there does not appear to have been a substantive change in the area of regional Australia that is covered by more than one mobile network operator.

Regional mobile telecommunications performance

A global shift away from providing physical access to services by governments and businesses means that regional mobile telecommunications has become an essential service that fundamentally affects access to services and, consequently, the quality of life and economic outcomes. There are three fundamental and measurable parameters that, when combined, provide the basis upon which judgements about mobile telecommunications can be made. The parameters are cost, access and performance.

The proposed MOCN service agreement between Telstra and TPG principally affects access and to a lesser extent cost. The information made available does not appear to provide guidance on minimum mobile telecommunications performance levels for either carrier in the Regional Coverage Zone.

Competition

The proposed MOCN service agreement between the largest (Telstra) and third largest (TPG) mobile network operators excludes the second largest (Optus) mobile network operator. This is not a balanced, open and competitive outcome; however, this is offset by the public benefit of TPG gaining an increased presence in the Regional Coverage Zone.

There is a question over the financial competitiveness of the proposed MOCN arrangement. As the financial details are not available, it is therefore reasonable to assume that the arrangement would benefit Telstra more than it benefits TPG. Optus would not benefit and may find an overall negative impact on its national competitiveness.

It is also important to note that this arrangement affects the MVNOs that utilise the Optus mobile network and, as discussed later, is likely to have a detrimental effect on regional small network operators.

In this instance, the question of competition is considered in three parts: infrastructure, spectrum and services.

Infrastructure

The MOCN service agreement increases the size of the Telstra mobile network when compared with the other operators. Telstra's dominance in the transit network market further reduces the likelihood of infrastructure competition in regional and remote areas. It is reasonable to assume that, if the MOCN service agreement commences, then further infrastructure investment by TPG will not occur in the Regional Coverage Zone whilst the agreement is in place. This outcome would further undermine the rationale behind the ACCC's flawed decision to not declare domestic mobile roaming in 2018.

The question becomes: if TPG stops investing in infrastructure in the Regional Coverage Zone whilst the agreement is in place, does this reduce competition?

Infrastructure competition is not a fundamental component of market competition, particularly when the infrastructure can be shared without mobile telecommunications performance loss or when sharing is a price-regulated requirement.

In 2021, Telstra "completed the sale of a 49 per cent non-controlling stake in its towers business for \$2.8 billion" ([Telstra, 2021c](#)). Also in 2021, Optus announced the sale of a 70 per cent "stake in Australia Tower Network (ATN), a wholly-owned subsidiary which operates Optus' passive telecommunications tower infrastructure, to AustralianSuper" ([Optus, 2021](#)).

The mobile telecommunications market spectrum auctions ensure that the carriers hold different spectrum lots and generally this means that all carriers can utilise shared infrastructure, including shared access to a common Radio Access Network (RAN), which can avoid unnecessary equipment duplication on towers.

Spectrum

The Applicants' submission to the ACCC seeks merger authorisation that effectively permits Telstra to use TPG's spectrum holding and this is deemed by Section 68A of the *Radiocommunications Act 1992* (Commonwealth) to be an acquisition as identified in Section 50 of the *Competition and Consumer Act 2010* (Commonwealth).

The Applicants have submitted that the Spectrum Authorisation Agreement, MOCN Service Agreement and Mobile Site Transition Agreement are commercially and legally interdependent and should be considered as a whole.

Competition in the Australian mobile telecommunications market is predicated on the understanding of how spectrum lots are allocated, auctioned and utilised by the successful bidder.

Spectrum is first and foremost an economic renewable resource that is allocated according to the government's social and economic policy. The government utilises a legislative instrument to direct the Australian Communications and Media Authority (ACMA) to auction spectrum in lots with spectrum licence limits. Spectrum may be set aside for one or more carriers to purchase or be auctioned with allocation limits. The purpose of this process is to ensure that the carriers have spectrum holdings that will facilitate competition in the mobile telecommunications market.

The proposed Spectrum Authorisation Agreement, if approved, would provide a mechanism for carriers to share or swap spectrum in one or more areas where they operate a mobile network or in fact do not operate a mobile network, as is the case here.

Another potential outcome could be carriers reducing the price bid for spectrum at auction because they have a pre-existing spectrum sharing arrangement or have had discussions on a future spectrum sharing arrangement. This outcome could be detrimental to the government's maintenance of spectrum as a renewable revenue source.

The proposed Spectrum Authorisation Agreement appears to be at odds with the legislative instruments ([AusGov 2012](#); [AusGov, 2018](#); [AusGov, 2021](#)) issued to the ACMA that set limits on carriers bidding for spectrum at auction and utilising the spectrum subsequently.

The *Radiocommunications (Spectrum Licence Limits) Direction No. 1 of 2012* ([AusGov, 2012](#)), paragraph 4, states:

- (1) I direct that the ACMA must determine procedures under subsection 60(1) of the Act that impose limits that ensure that, as a result of the allocation of spectrum licences under Subdivision B of Division 1 of Part 3.2 of the Act, no person or specified group of persons may use more than:
 - (a) 20MHz of spectrum available in the designated area in the frequency band 703MHz to 748MHz; and
 - (b) 20MHz of spectrum available in the designated area in the frequency band 758MHz to 803MHz.

The *Radiocommunications (Spectrum Licence Limits—3.6 GHz Band) Direction 2018* ([AusGov, 2018](#)), paragraph 5, states:

- (2) The limits imposed must:
 - (c) ensure that no person or specified group of persons may, as a result of the allocation of a spectrum licence that is enabled by a relevant re-allocation declaration, use:
 - (i) more than an aggregate of 60 MHz of the relevant band in each metropolitan area (whether or not at the same location in that metropolitan area);
 - (ii) more than an aggregate of 80 MHz of the relevant band in each regional area (whether or not at the same location in that regional area)[.]

The *Radiocommunications (Spectrum Licence Limits—850/900 MHz Band) Direction 2021* ([AusGov, 2021](#)), paragraph 5, states:

- (1) I direct the ACMA to determine allocation procedures under subsection 60(1) of the Act that impose limits, in accordance with sections 6 and 7, on the aggregate of the parts of the spectrum that may, as a result of the allocation of spectrum licences under Subdivision B of Division 1 of Part 3.2 of the Act, be used by any one person or by the groups of persons specified in those sections.
- (2) The limits imposed must apply to the allocation of spectrum licences in the 850/900 MHz band enabled by the re-allocation declaration.

Paragraph 7 states:

- 7 Limit applying to all persons and relevant groups of persons
 - (1) For this section:
 - (a) the limits imposed must apply in relation to the sub-1 GHz band in the major population area and the regional area; and
 - (b) the limits imposed must ensure that no person or relevant group of persons may use:
 - (i) more than an aggregate of 82 MHz of the sub-1 GHz band under spectrum licences in the major population area; or
 - (ii) more than an aggregate of 92 MHz of the sub-1 GHz band under spectrum licences in the regional area[.]

The legislative instruments clearly state that “no person or relevant group of persons may use” and this appears to indicate that the Spectrum Authorisation Agreement cannot be authorised by the ACCC, unless there is another interpretation of the Act or of the legislative instruments being relied upon.

The Applicants state ([TelstraTPG, 2022](#)) in paragraph 139 that: “Telstra does not need to make 5G available to TPG at a particular site in the 17% Regional Coverage Zone until six months after the site was activated for 5G for Telstra Comparison Customers (subject to some limited exceptions)”. This statement indicates that, for a period of six months at each site in the Regional Coverage Zone, Telstra can enjoy a period when it is fully utilising the pooled spectrum. This statement highlights the need for clarity on whether or not the ACCC is in a position to override the legislative instruments or there is some other legislation or interpretation upon which the ACCC could support this arrangement.

The Applicants further state ([TelstraTPG, 2022](#)) in paragraph 241 (a): “the relative proportion of use [of the pooled spectrum] between Telstra and TPG will be determined by their competitiveness at the retail and wholesale levels. It cannot be assumed that one or the other would get more or less as this is a process of competition ...”. An open, fair and competitive telecommunications market does not commence with one network operator having all of the infrastructure and all of the customers in an area, unless there are actions taken through legislation and regulation to balance the “playing field”. In this instance, Telstra and TPG appear to be asking the ACCC to take a leap of faith that the MOCN arrangements will put in place an open and competitive environment for Telstra and TPG to grow market share. What-ifs should not be part of the ACCC’s considerations and should not be entertained.

Another way of looking at this situation is that TPG Telecom has spectrum, has decided to not invest further in infrastructure in regional Australia, and is seeking to find a way forward.

If the government’s view is that Telstra, Optus and TPG are expected to have separately operated mobile networks, then it would hold that the government is expecting the ACCC to enforce the spectrum limits; otherwise, the competitive tension in the mobile telecommunications market could be significantly diminished.

But what about in an area where one carrier does not operate a network and has made the decision that it is not economically viable to install competing infrastructure?

To utilise the spectrum that it holds, TPG has made the decision to seek an arrangement that permits the spectrum to be used in an area where it would otherwise not operate or not fully gain the benefits afforded by the spectrum holding.

As identified earlier, the ACCC’s failure in 2018 to identify this inevitability has likely led us to this point.

Services

Whilst an outcome of the proposed MOCN commercial arrangement would be the introduction of TPG 4G and 5G services in the Regional Coverage Zone, there are factors related to the services that should be considered.

The TPG service charges will include a component set by Telstra that is offset by the Spectrum Authorisation Agreement, and a Mobile Site Transition Agreement. Whilst it is not unusual for a network operator to lease access to infrastructure and facilities, the proposed arrangement may be unusual because of the quantum of what is proposed, the unknown value of the Spectrum Authorisation Agreement and the effect that it may have on future TPG product pricing.

Public Benefit

The MOCN commercial arrangement would have an immediate public benefit with the introduction of TPG 4G and 5G services in the Regional Coverage Zone. This would permit existing TPG customers to utilise their mobile devices in the Regional Coverage Zone and, for residents and businesses within the Regional Coverage Zone, the opportunity would exist to select TPG as their mobile service provider.

For Telstra, the MOCN commercial arrangement would significantly boost its regional network, both in size and value. With more customers utilizing this network, the infrastructure cost per customer reduces and profitability increases.

There is also the benefit for Telstra that the Spectrum Authorisation Agreement could potentially enhance the performance of the mobile network, but only if additional capacity is supplied to the existing network.

Effectively, only two carriers would now be bidding for mobile blackspot funding in the Regional Coverage Zone. It is anticipated that an increasing share of the mobile blackspot funding will be delivered to Telstra, thereby further enhancing Telstra's dominant infrastructure and transit position in regional and remote areas.

At some point, if not already, Telstra could become a regional and remote mobile telecommunications monopoly infrastructure and transit provider, particularly if Optus withdraws from or reduces its investment in regional mobile telecommunications.

As discussed earlier, a hypothetical mobile telecommunications market where there are three networks operated by three carriers with roughly equivalent spectrum holdings was always unlikely in regional and remote Australia.

The ACCC has demonstrated difficulty grasping this reality. It is now time for the ACCC to adopt an alternate approach to foster competition in the regional mobile telecommunications market.

Throughput (capacity)

Recommendation Seven of the 2021 Regional Telecommunications Review Report ([RTR, 2021](#)) highlights an area of significant concern regarding regional telecommunications. The recommendation calls for government to develop and enforce “minimum wholesale and retail service, performance and reliability standards appropriate for each service type (fixed and landline, mobile, fixed wireless, satellites)”.

A potentially significant public detriment could occur if Telstra does not increase the data throughput (capacity) made available at its mobile base stations, by upgrading the capacity of the access network and its backhaul network. With an increase in customers at each mobile base station due to TPG customers using Telstra’s network infrastructure, there would be a requirement for a corresponding increase in data throughput (capacity).

The government has committed to a \$20 million independent national audit of mobile coverage, commencing in 2022 ([Albanese, 2022](#)).

Small network operators

In regional and remote areas small network operators currently enter into agreements with carriers to utilise unused spectrum holdings. This normally occurs in sparsely populated areas where the spectrum holder has no plans to provide services themselves. This is an opportunity that has fostered growth in the regional small network operator market. Small network operators provide a vital service in regional and remote areas and are often the only technical people available in local communities to provide specialised telecommunications advice, services and assistance.

There is a strong likelihood that the proposed MOCN commercial arrangement will result in existing small network operators having spectrum withdrawn or reduced, even in areas where the spectrum is not used and will never be used by the spectrum holders.

Whilst the regional small network operators are not guaranteed access to spectrum as they are not the license holder, the potential for Telstra or TPG, or both, to act to further reduce competition in regional and remote areas by restricting access to this unused spectrum is high. This would be a highly detrimental outcome for local communities in regional and remote areas.

Optus

For Optus the proposed MOCN arrangement between Telstra and TPG is likely to be highly undesirable. If the merger authorisation is approved, Optus is expected to challenge the decision in court, as Optus could argue that the MOCN arrangement significantly alters the nature of competition in the mobile telecommunications market in the Regional Coverage Zone and beyond. Optus may also seek damages against the Commonwealth for potential losses related to a decision by the ACCC that detrimentally affects its future earnings potential.

Whilst market dynamics cannot be predicted, if, as a result of the MOCN arrangement, Optus loses market share or the value of its infrastructure investment in regional and remote areas diminishes, it could be forced to universally raise product charges.

The flow-on effect could have a significantly detrimental effect on the MVNOs that utilise the Optus network. Similarly, this could mean higher product charges for affected MVNOs. It is also likely to negatively impact existing MVNOs who utilise TPG's spectrum holdings in regional areas, where Telstra will have the authority to direct TPG to block access to reduce competition.

It is important for the ACCC to identify that the proposed MOCN arrangement is not expected to spur further investment by Optus or any other carrier in regional and remote areas. Current investment in infrastructure in regional and remote areas by Optus highlights that it is carefully selecting locations where customer density (whether this is permanent residents and businesses, or transitory tourists) and access to price regulated non-Telstra transit is such that the investment is justified.

Alternatives

It is reasonable for the ACCC to consider alternatives that might provide a more balanced competitive outcome. The alternatives could be put to the carriers for comment, as they might provide valuable input when the ACCC considers the MOCN arrangement.

A declaration of domestic mobile roaming in regional and remote areas would be inclusive of all mobile network operators, would facilitate infrastructure and spectrum sharing arrangements, and would be price regulated. Further, despite Telstra's protestations, there is no evidence to suggest that this declaration would thwart or stop investments in regional areas.

A condition that Telstra splits into two companies (retail and wholesale) that are separately listed legal entities could provide a similar outcome to a declaration of domestic mobile roaming in regional and remote areas. The new wholesale entity would include (but not be

limited to) infrastructure and transit resources needed to provide mobile telecommunications in regional and remote areas.

If the ACCC decides to deny the merger authorisation, the ACCC must not make the mistake that a resumption of the status quo is acceptable, because not only would the benefits of the MOCN arrangement be lost, but also the telecommunications market would not become open and competitive in regional and remote areas.

Telstra's recent change to its business model, where it has split into three segments, two of which are aimed at 'reselling' their fixed and mobile infrastructure, is resulting in a significant change in market dynamics. The Telstra-TPG MOCN agreement is an example of how Telstra's infrastructure holdings, if properly regulated, could be a game changer for regional telecommunications. This warrants strategic telecommunications reviews by the government and the ACCC of what legislation and regulations are needed in this new environment; and domestic roaming, particularly in regional areas, should be a significant element of the reviews.

The 2021 Regional Telecommunications Review Report ([RTR, 2021](#)), with its long list of recommendations, highlights that the ACCC must act to improve regional mobile telecommunications outcomes.

Recommendations

The following recommendations are made.

If the ACCC approves the MOCN arrangement:

1. A condition be set that Telstra Corporation is to split into two legal entities (retail and wholesale) separately listed on the ASX with independent share registries and boards. The entities would voluntarily agree to not hold shares amounting to more than twenty per cent of the other entity's shares. The new wholesale entity would own infrastructure, facilities and transit needed (as a minimum) to provide mobile telecommunications in regional and remote areas.
2. A condition be set that Optus be invited to participate.
3. A condition be set that access and other charges be price regulated in areas where there are fewer than two alternate third party infrastructure and transit providers.

If the ACCC does not approve the MOCN arrangement:

1. Alternative approaches are required that permit Telstra, Optus, TPG, small regional network operators, and the MVNOs to competitively provide improved mobile telecommunications to regional mobile telecommunications consumers, ensuring that

Telstra is not permitted to place restrictions on access to TPG's spectrum holdings by third-party MVNOs.

2. A new domestic mobile roaming inquiry be commenced.

Conclusion

This paper has considered the application for merger approval from Telstra Corporation Limited and TPG Telecom Limited related to three interrelated agreements that would put in place a MOCN arrangement. There is a strong linkage between the ACCC's decision in 2018 to not declare domestic mobile roaming and the application for merger put to the ACCC by Telstra and TPG. Telstra and TPG are acting in the best interests of their shareholders.

The question of likely public benefits versus public detriment is vexed, because mobile telecommunications in regional and remote areas has not enjoyed an open and competitive environment, due to how telecommunications deregulation has occurred in Australia. Public funding and mobile blackspot funding over past decades has further diminished competition in regional and remote areas by channelling public money to Telstra, further distorting and unbalancing the market.

If the application for merger is to be approved by the ACCC, then conditions should be placed upon what is permitted. If the application for merger is not approved by the ACCC, then alternative arrangements should be established immediately to provide a more balanced, open and competitive outcome that does not exclude Optus and MVNOs that access the Optus network or MNVOs that currently access the TPG/Vodafone network.

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Regional Mobile Telecommunications Performance

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Abstract: Mobile Telecommunications is an essential service that fundamentally affects quality of life by improving communication, the ability of business and industry to improve productivity and for the nation to compete successfully in the global digital economy. There are three fundamental and measurable parameters that, when combined, provide the basis upon which judgements about mobile telecommunications can be made. The parameters are cost, access and performance. Information is readily available about the first two parameters. Quantifiable information is not available about performance. Regional mobile telecommunications is further complicated by factors including population density, the cost of transit or backhaul and infrastructure subsidies. This paper provides a discussion on regional mobile telecommunications performance and focuses on throughput (capacity). The paper recommends that regional mobile telecommunications performance data be collected and that minimum performance standards for regional mobile telecommunications be legislated.

Keywords: Telecommunications, Mobile, Broadband, Access, Regulation

Introduction

Mobile telecommunications is an essential service that fundamentally affects quality of life by improving communication, the ability of business and industry to improve productivity and for the nation to compete successfully in the global digital economy.

There are three fundamental and measurable parameters that, when combined, provide the basis upon which judgements about mobile telecommunications can be made. The parameters are cost, access and performance. This paper focuses on performance and, in particular, throughput (capacity).

Cost includes the capital cost of infrastructure and devices used to connect to the mobile network and the ongoing operational costs including the monthly plan charges. For consumers, the cost of the mobile network plans is readily available on the mobile network operator websites.

Access is being able to connect to the mobile telecommunications network at home and at work and with the requisite knowledge to utilise the applications and services (especially government services) provided over the mobile telecommunications network ([Infrastructure Australia, 2020](#)). Access also includes service reliability and other impacts that might reduce access. Mobile network operators provide coverage maps on their websites.

Performance is being able to reasonably utilise mobile telecommunications for voice and video calls and to utilise applications and services over the Internet utilising mobile telecommunications broadband data. Measures which can be used to assess performance in mobile telecommunications networks include upload and download speeds, ping time, latency, jitter and packet loss, application processing time, transit link delay, amongst others. Mobile telecommunications performance will vary due to a variety of technical and non-technical factors, such as access network and backhaul capacity, distance from towers, carrier frequency, technology employed, content delivery networks, terrain, weather, and network congestion.

In Australia every three years, the Government appoints the Regional Telecommunications Independent Review Committee (RTIRC) to conduct a review into regional telecommunications in regional, rural and remote parts of Australia ([RTR, 2021a](#)).

Complaints about mobile telecommunications in regional, rural and remote areas of Australia gain media coverage, but achieving outcomes based on the complaints can be difficult, particularly related to performance ([Richards, 2020](#); [Smith, 2021](#); [Herrmann, 2021](#); [Mills, 2021](#); [Ward & Schremmer, 2021](#)).

In 2018, the RTIRC Report titled *2018 Regional Telecommunications Review – Getting it right out there* ([Edwards et al., 2018](#)) made the following recommendations related to cost, access and performance:

1. Cost. Recommendations 3, 8, 9.
2. Access. Recommendations 1, 2, 4, 7, 8, 10.
3. Performance. Recommendation 6.

On 2 June 2021, the Government announced ([Coulton, 2021](#)) the RTIRC to undertake the 2021 RTR and provided the Terms of Reference (ToR) ([RTR, 2021b](#)).

A review of the eight ToR sections related to cost, access and performance indicates:

1. Cost. Sections 1, 4, 5.
2. Access. Sections 1, 2, 4, 5.
3. Performance. Sections 1, 4.

Sections 1 and 4 contain generic references to performance that do not identify requirements for data, nor tangible performance outcomes. Sections 1, 6, 7 and 8 relate to the requirement for the committee to carry out public consultations and consultations with people in regional, rural and remote parts of Australia (Section 3), the requirement for a report (Section 6) containing recommendations to the Australian Government, a requirement for the committee to assess the costs and benefits when formulating recommendations (Section 7), and the report submission deadline of 31 December 2021 (Section 8.)

Performance Measures

In this section several factors affecting regional mobile telecommunications performance are discussed. For the consumer, cost, coverage and connection speeds are the three factors that are most visible either through the mobile network operator websites or through media advertising ([Ward, 2021](#); [Bushell-Embling, 2020](#); [Fletcher, 2021](#); [Waring, 2021](#)). Advertising related to the performance of mobile networks has, on occasion, been found to make representations that have ended up in court ([Reichert, 2018](#); [Arboleda, 2018](#); [Wilkinson, 2020](#)).

Coverage and connection speeds

To gain an understanding of “real-world” coverage and connection speeds it is necessary to read the legal risk mitigation disclaimers provided by the mobile network operators. Often, the disclaimers cover more than one of the mobile network technologies, affording the opportunity to do a comparison. In an online statement about Telstra 4GX, the carrier states ([Telstra, 2021a](#)):

“The Telstra Mobile Network offers 4GX in all capital CBDs and selected suburban and regional areas and is progressively rolling out to more places. In other coverage areas around Australia you’ll automatically switch to our fastest available 4G or 3G. Check coverage at [telstra.com/coverage](#).

In 4GX areas, typical download speeds are 2-75Mbps for 4GX category 4 devices, 2-100Mbps for 4GX category 6 devices and 5-150Mbps for 4GX category 9 devices.

With a Telstra 4G device in 4G areas, typical download speeds are 2 – 50Mbps.

Speeds vary for reasons like location, distance from base stations, terrain, user numbers, hardware/software configuration, download source and upload destination. To check the coverage and available speeds in your area, see our coverage.”

There are two points of interest made in this statement. The first is that Telstra identifies download connection speed ranges for phone categories. Secondly, the low end of the

connection speed range starts at 2 Mbps irrespective of the mobile technology and phone category. The statement does not provide connection speeds for typical scenarios, e.g., standing outside on a clear or cloudy day 500 m from and with clear sight of a mobile base station.

It is important to note that the statement found on the Telstra website is being used as a guide in this paper for two reasons. First, Telstra states that “we cover more than 2.5 million square kilometres – that’s 1 million square kilometres more than any other network” ([Telstra, 2021b](#)). Secondly, Telstra is the largest carrier and currently it is the Universal Service Obligation (USO) ([USO, 2021](#)) provider. Telstra’s statement is indicative of the language provided by carriers regarding mobile telecommunications access and typical download speeds.

Location and processing times

It should be noted that application processing time, which is the time taken by an application to process a message after receiving it and to send a response, is a factor under the control of the carriers and the third-party companies that provide the applications and services, but that, for clarity of this paper, this discussion is beyond the scope of this paper.

Another factor that should be considered affecting regional mobile telecommunications performance is the location of the data centres that host most of the applications and services (including content) accessed by end users. A survey of the literature, including online, journals and conference papers, government sources and company documents, did not find any studies that identify the number, distribution or location of the applications and services accessed by mobile telecommunications users.

Streaming media providers have been quick to utilise content distribution network providers and have provided carriers with proxy servers. This has helped with reducing the complaints sent to the Telecommunications Industry Ombudsman (TIO) about buffering and poor performance.

The number of applications and services hosted in data centres in Sydney, Melbourne and overseas is unknown; however, it is reasonable to assume that most of the content is hosted there.

Application performance related to number, distribution, location and processing times is measurable, and, if this was done, the information gathered would have substantial value, when it is combined with other measures, to customers because it would provide more information that they can use when they choose their mobile plan.

Detrimental performance can occur due to distance to the data centres (latency), the available network capacity provisioned onto the transit (backhaul) links, and the capacity provisioned to each of the mobile base stations.

A mechanism to alleviate performance degradation due to latency and packet loss is to ensure that there is sufficient network capacity. A secondary, but also important, mechanism to improve mobile telecommunications performance is to distribute the applications and services closer to end users, e.g., at edge data centres.

Discussion

Performance studies

A survey of the literature including online, journals and conference papers, government sources and industry sources did not uncover any rigorous studies into the performance of mobile telecommunications in regional, rural and remote areas of Australia. Discussion related to regional mobile telecommunications performance has occurred in the RTR reports, but only in the context of more needs to be done to improve performance ([RTR, 2021a](#)).

Infrastructure Australia ([2020](#)) has also identified that more needs to be done about mobile telecommunications coverage and performance in regional and remote areas. In an early-stage proposal (stage 1) on *Mobile telecommunications coverage in regional and remote areas*, Infrastructure Australia states that the proposal is to “improve the availability and quality of mobile services in certain regional and remote areas”. The proposal does not appear to have moved forward with the next step identified as “Proponent(s) to be identified”.

Telecommunications performance is often measured and compared using connection speed tests conducted by users on third-party testing sites ([Ookla, 2021](#)). The carriers themselves often also provide access to the third-party connection speed test tools ([Telstra, 2021c](#)). However, since most of the applications, services and content required by users is not hosted on the carrier networks but in data centres located in Sydney, Melbourne and overseas, third-party organisations that connect to or operate content delivery networks can provide a more representative result. The third-party organisations, such as Ookla and the crowd-sourced OpenSignal, provide a generic insight into one aspect of mobile telecommunications performance, which is the latency and upload and download speeds between the end-user device and the server hosting the speed test application.

Whilst the generic connections speed tests do not provide a comprehensive measure for mobile telecommunications performance, they do provide a valuable but limited insight.

For example, the Telstra mobile network connection speed tests in Western Australia are carried out between end-user devices and the application servers located in Perth. If the vast majority of applications and services are located in data centres in Melbourne, Sydney and overseas, what effect does the transit link from Perth to the data centre have?

The mobile network connection speed test servers appear to be located in the capital cities in each state and territory. This provides an opportunity for the following equity related questions to be answered:

1. Are the mobile network connection speeds and latency consistent between states and territories?
2. Are the mobile telecommunications connection speeds and latency experienced in regional, rural and remote areas of Australia similar to that in urban areas of Australia?
3. What is the latency for each of the interstate and territory transmission links?

Access

In 2015, I argued for a universal access regime in the paper titled *The Rationale for Universal Access to Digital Services* ([Gregory, 2015](#)) that enshrines the principal of “ensuring that federal, state and local government and other specified digital services are reasonably accessible to all, on an equitable basis, wherever they work or live”.

The principal of universal service upon which the proposed universal access regime is based is a long-standing consumer protection that ensures everyone has access to landline telephones and payphones regardless of where they live or work ([USO, 2021](#)). There is an understanding that the performance of the landline telephones and payphones covered under the USO would meet industry standards and guidelines and be similar, irrespective of where the infrastructure is located. The performance criteria to be met by the current USO provider, Telstra, for fixed-line and payphone standards and benchmarks are contained in the Telecommunications (Consumer Protection and Service Standards) Act 1999 (TCPSS Act) ([TCPSS, 2020](#)).

Section 115 of the TCPSS Act provides for the required performance standards and subsection 115(1) states that the Australian Communications and Media Authority (ACMA):

“may, by written instrument, make standards to be complied with by carriage service providers in relation to:

- (a) the making of arrangements with customers about the period taken to comply with requests to connect customers to specified kinds of carriage services; and

- (b) the periods that carriage service providers may offer to customers when making those arrangements; and
- (c) the compliance by carriage service providers with the terms of those arrangements; and
- (d) the period taken to comply with requests to rectify faults or service difficulties relating to specified kinds of carriage services, where the rectification follows the making of a customer report about a fault or service difficulty; and
- (e) the keeping of appointments to meet customers, or representatives of customers, where the appointment relates to:
 - (i) a connection of a kind covered by paragraph (a); or
 - (ii) a rectification of a kind covered by paragraph (d); and
- (f) any other matter concerning the supply, or proposed supply, of a carriage service to a customer.”

Section 117B of the TCPSS Act provides for performance benchmarks and subsection 117B(1) states that “the Minister may, by legislative instrument, set minimum benchmarks in relation to compliance by carriage service providers with a standard in force under section 115.”

Following deregulation of the Australian telecommunications market in the 1990s, the focus has been on access to telecommunications and the government has facilitated ‘Black Spot’ programs ([Australian Government, 2021](#)) to provide government funding to mobile telecommunications carriers to build infrastructure in areas of need that might not otherwise be covered.

It is arguable that access and the cost of providing access has been somewhat quantified and government, government agencies and the carriers have the information necessary to make justifiable decisions related to the provision of access, sometimes at taxpayer expense.

Utility

It is possible for cost to be reasonable and access to be available but for the utility of mobile telecommunications to be poor.

For example, in 2018, I proposed four options for the future ownership of NBN Co beyond 2022, when the National Broadband Network (NBN) is expected to be built and fully operational ([Gregory, 2018](#)). What that paper did not address was what performance users of the NBN should expect before or after the NBN completion date, and this question highlights

the similarity between the NBN and mobile telecommunications, particularly when it comes to the question of utility.

The Australian Competition and Consumer Commission (ACCC) commenced a Measuring Broadband Australia (MBA) program to monitor the NBN connection speeds and latency in 2018, eight years after the NBN rollout commenced ([ACCC, 2021](#)). In the years prior, a rising number of complaints about NBN connection performance from advocates and consumers convinced government to fund the ACCC program, and this program has now been extended for a second term until 2025.

In a review of the program, the ACCC reported ([ACCC, 2021](#)) that the program is the “only independent source of reliable broadband performance information” and that:

“The Measuring Broadband Australia program is an important component in furthering the Government’s priority to facilitate consumer access to affordable and reliable communications services, irrespective of where consumers live or work. It is also a key element of the ACCC’s integrated strategy for improving competition and consumer outcomes in broadband markets, along with our Broadband Speed Claims guidance and enforcement actions. This approach has successfully assisted in the delivery of improved market outcomes for consumers of high speed broadband services.”

The ACCC states that “the MBA program is a light touch, market based measure that increases competitive pressure on RSPs to deliver the performance they represent to the market”. The ACCC argues that this light-touch approach has led to a decrease in the number of underperforming services and an increase in download speeds of monitored services.

The ACCC draws upon the support of regional, rural and remote consumer advocate groups that expressed in 2018 strong support for the program and for it to be extended to cover NBN fixed wireless and satellite services ([Edwards *et al.*, 2018](#)).

Whilst the MBA program has only been partially successful in achieving improved connection speed and latency for NBN fixed access customers, the alternative, no MBA program, would be unimaginable to consumer advocates. In other words, the data that the MBA program has provided has been vital in the effort to improve NBN performance and consumer outcomes.

The outcomes have been promising but limited by the “light-touch” approach adopted by the ACCC and the failure of government (1) to acknowledge the mistake to shift from FTTP; and (2) to mandate a rapid rollout of FTTP to 93 per cent of premises.

The question remains, what will the minimum performance be for NBN consumer connections when the MBA program ends in 2025, or will government be forced to continue to fund this program indefinitely?

The cost of mobile telecommunications for users in regional, rural and remote areas of Australia is equitable with the cost for users in urban areas. The tier one Australian mobile network operators offer mobile plans consistently to all consumers, irrespective of where they live or work.

From a consumer perspective, mobile telecommunications performance is about the utility of mobile telecommunications to successfully carry out voice and video telephone calls and to be able to fully utilise applications and services over the Internet utilising mobile telecommunications broadband data.

Preliminary Study

There is an identifiable lack of data related to regional mobile telecommunications performance. Without quantifiable data, government is not able to formulate reasonable policy and regulations.

Consumers can, of course, complain to the TIO about the performance of their mobile telecommunications service; however, without an objective measure of what constitutes acceptable 'performance', it is challenging for the TIO to act. Further, the number of complaints about regional mobile services is low when compared to the number of overall complaints about the NBN. This is to be expected when the number of people living and working in regional, rural and remote areas is significantly smaller than the number of NBN subscribers.

Due to deficiencies in the data available from the TIO, it is difficult to identify TIO complaint figures related to regional mobile telecommunications and it is therefore problematic to refer to TIO data outputs ([TIO, 2020](#)) when discussing the state of regional mobile telecommunications.

To investigate the issue, a preliminary study of regional mobile telecommunications performance was carried out during July and August 2021 in South Australia, Northern Territory and Western Australia. The Telstra mobile network was used for the connection speed and latency tests for two reasons: (1) availability of a 3G/4G/5G phone connected to the Telstra network; and (2) in many areas traversed, the only provider is Telstra.

It is important to identify that this was an exploratory study and the results are not rigorous and therefore not suitable for publication. The purpose of the exploratory study was: (1) to

follow up on a number of requests that were received for regional mobile telecommunications performance to be investigated; and (2) to identify if a rigorous study should be carried out.

Connection speed and latency tests were not carried out in every location traversed due to the time available.

There were three high-level outcomes identified from the exploratory study:

1. Across all regional areas studied, the average connection speeds were between 0-10 Mbps download and 0-2 Mbps upload.
2. Most small cells near mining sites had download and upload connection speeds above 20 Mbps.
3. Connection speeds in more than five major regional centres in Western Australia were between 0-10 Mbps download and 0-2 Mbps upload.
4. Connection speeds greater than 50 Mbps download and 20 Mbps upload were only achieved in Perth and Kalgoorlie.

In all cases, the measurements were taken with clear line of sight to the mobile base stations, on a clear or cloudy day and with the distance to the mobile base stations of between 500 m to 750 m. Other measurements were made and are not referred to here, such as measurements made whilst in transit; however, none of these measurements were inconsistent with the performance observed.

Discussion

It is my view that, based on the outcomes of the preliminary study, there is an urgent need for a rigorous study of regional mobile telecommunications performance. This study should include connection speed and latency tests, transit latency and capacity, and number, distribution, location and processing times of applications and services utilised by regional mobile telecommunications users (particularly government digital services).

As with the NBN, there is an urgent need for the ACCC to develop minimum mobile telecommunication service expectations that go beyond the flawed “light-touch” approach that is currently in favour at the ACCC for NBN services.

When the MBA program ends, there could be a reversion of NBN connection performance to a previous state that is detrimental to consumers. Also, the ACCC does not have a full and clear understanding of factors affecting performance, as it does not appear to be considering the parts of the networks beyond the access network.

The Australian mobile telecommunications industry is self-regulated. To improve customer outcomes the government should direct the Australian Communications and Media Authority (ACMA) to work with the industry peak body, Communications Alliance, to develop an

industry standard covering mobile telecommunications performance that includes standard scenarios, connection speeds and capacity.

Domestic Mobile Roaming Declaration

An ACCC domestic mobile roaming declaration inquiry was completed on 23 October 2017 ([ACCC, 2017](#)). The inquiry outcome was a decision by the ACCC to not declare domestic mobile roaming. The ACCC stated that it was “not satisfied that declaration would promote the long-term interests of end-users”. The ACCC released a paper titled *Measures to address regional mobile issues* that contained proposals for “a number of measures to improve mobile services in regional areas”.

The rationale for the ACCC decision was fundamentally flawed. The proposals related to performance identified in the ACCC paper do not appear to have been achieved, and a review has not identified an ACCC work program that will lead, in a reasonable time, to the proposals being achieved.

In the years since this decision, the disparity between the Telstra regional mobile telecommunications network and the competitor networks appears to have increased ([Telstra, 2021b](#)), Telstra continues to attract the majority of Black Spot funding from the Federal and State governments ([Telstra, 2021d](#)) and there does not appear to have been a substantive change in the amount of regional Australia that is covered by more than one mobile network operator.

The ACCC paper states that “there is a need for better transparency about network coverage, quality, expansions and improvements”, yet this does not appear to have occurred. The ACCC paper also states that “network coverage and quality information is inaccurate and lacks transparency”.

The ACCC paper provides strong and justifiable arguments for a declaration of domestic mobile roaming to be made, yet the “light-touch” ideology that appears to be in favour at the ACCC means that the declaration was not made in 2017.

On 22 February 2018, the ACCC hosted a forum ([ACCC, 2018](#)) with stakeholders to discuss the issues raised in the *Measures to address regional mobile issues* paper. The summary of findings from session 1 includes the statement that “improvements are needed in the provision of accurate, comparable and reliable information on the quality and extent of mobile coverage”.

The mobile network operators provide coverage maps on their websites and, whilst the coverage maps cannot be replicated with the information available, it is possible to gain an insight into the “extent of mobile coverage”.

“Accurate, comparable and reliable information on the quality” of mobile coverage does not appear to be available in any form. It does not appear to be available on the mobile network operator websites, nor does it appear to be available from the ACCC or any other government agency.

The only information available on the mobile network operator websites appears to exist in disclaimer form, as if to ensure that performance, whether poor, reasonable or good, is covered by a legal risk mitigation statement.

For example, Telstra’s website ([Telstra, 2021a](#)) contains the statement “with a Telstra 4G device in 4G areas, typical download speeds are 2 – 50Mbps” and “[i]n 4GX areas, typical download speeds are 2-75Mbps for 4GX category 4 devices, 2-100Mbps for 4GX category 6 devices and 5-150Mbps for 4GX category 9 devices.”

If urban mobile telecommunications users were experiencing mobile telecommunications download speeds sub-10 Mbps for long periods of time, as it appears to be the case in regional, rural and remote areas as identified in the exploratory study mentioned earlier, it would be assumed that there would be a significant rise in complaints via the TIO and the problem would become a prime-time media topic.

It is also remarkable that the ACCC permits the mobile network operators to boast of “amazing” download speeds, up to 1 Gbps for 5G, yet the ACCC does not require the mobile network operators to temper this marketing hype with information on typical speeds achieved for a range of standard scenarios, e.g., (1) time of day, (2) location, and (3) standing or walking within clear sight and 500 m of a tower on a clear or cloudy day.

This begs the question: when will action be taken to secure the data needed to generate “accurate, comparable and reliable information on the quality” of regional mobile telecommunications?

One positive outcome that a declaration of domestic roaming in regional, rural and remote areas would have is an improvement in performance, because it is assumed that (1) the other carriers would want minimum performance standards to be set to reduce the likelihood of complaints, and (2) an increase in the number of mobile telecommunications users in regional, rural and remote areas, thereby increasing the number of complaints when poor performance occurs.

Recommendations

The following recommendations are made:

1. Federal government funding should be made available for an academic study of regional mobile telecommunications performance to be carried out or for funding to be provided to the ACCC for the MBA program to be extended to regional mobile telecommunications.
2. The Federal government should legislate minimum performance standards for regional mobile telecommunications.
3. The Federal government should require the ACMA to work with Communications Alliance to prepare an industry standard on mobile telecommunications performance.
4. Regional mobile telecommunications performance should be the same as urban mobile telecommunications performance for government applications and services.
5. The ACCC should declare domestic mobile roaming for regional mobile telecommunications for a period of three years.

Conclusion

This paper discusses regional mobile telecommunications performance and identifies the urgent need for data to be collected that will permit the current state of regional mobile telecommunications to be ascertained. The imbalance in the provision of mobile telecommunications in regional, rural and remote areas, and the lack of follow through on data collection, provide strong justification for the ACCC to declare domestic mobile roaming for a period of three years. The lack of legislated minimum performance standards for all telecommunications in Australia means that consumers can experience sub-standard performance, and this is especially evident for regional, rural and remote mobile telecommunications users. This situation must be rectified by the Federal government and minimum performance standards for telecommunications should be legislated. Regional mobile telecommunications users need relief, and there must be a realisation that minimum performance standards and expectations for urban and regional, rural and remote users should not differ.

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