Auction Subsidies and the Universal Service Obligation: The case for remote Indigenous communities

Submission to the Regional Telecommunications Independent Review Committee (RTIRC)

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Executive Summary

The Issues Paper asks: *Are there new or other services, the availability of which should be underpinned by consumer safeguards? (Q12)*

Results from a 4-year ARC-funded research project (LP110200440, led by Rennie¹) reveal how the current Universal Service Obligation (USO) is failing to meet the needs of Indigenous Australians living in remote communities. The consumer preferences of this group differ significantly from other groups, leading to a situation of digital exclusion in areas without mobile reception. Current regulatory measures designed to protect basic access to telecommunications are in fact working to restrict new retail offerings from emerging. We contend that Australia’s USO requires adjustment in order to enable the emergence of new services that fit minority group preferences. Subsidy auctions, together with changes to the definition of services provided under the USO are a possible solution, and likely to be achievable within the terms of Telstra’s current 20-year USO contract. In the final section of this submission we provide international examples of the kinds of services that might arise under our proposed changes.

1. The rationale of the USO

In an unconstrained market for telecommunication services where the price that consumers are willing to pay lies above the cost of service delivery, a free market will supply that service, and not otherwise. However, because some consumers are much cheaper to supply than others (e.g. urban households), some consumers will experience a substantial consumer surplus (having a service supplied for much less than what they are willing to pay), while other consumers (e.g. remote households) will have the opposite experience, where the cost of supply lies above what they are willing to pay. Consumers in the second group will receive nothing in a free market, as no supply will be forthcoming at their prevailing willingness to pay. Without subsidy of some kind, including transfer from other consumers, this group will not be supplied telecommunication services.

A USO is a market design mechanism that works to transfer some of the consumer surplus from one group as an implicit subsidy to another group by effectively forcing a monopoly provider to treat them all as a single market and

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¹ Swinburne Institute for Social Research: Ellie Rennie, Julian Thomas, Eleanor Hogan; Centre for Appropriate Technology: Andrew Crouch, Robin Gregory; Central Land Council: Alyson Wright; Australian Communications Consumer Action Network. Funded by the Australian Research Council Linkage Project Grant. Baseline study supported by a grant from the Australian Communications Consumer Action Network (2010). Additional support provided by the ARC Centre of Excellence for Creative Industries and Innovation.
prohibiting price discrimination. In Australia, a core rationale for the USO is to provide access to telecommunications for those residing outside of the cities\(^2\). The result in theory is that everyone receives the same supply and pays the same price: the USO thus imposes a kind of transfer from urban to remote consumers via a single provider. In practice, urban consumers receive less consumer surplus than they would under free competition, but remote consumers are provided a minimal service, if any.

The USO is economically inefficient – by definition, because it violates the marginal pricing principle – but is considered socially fair. However, the USO comes at the cost of economic and technological efficiency, largely because it ignores the preferences and trade-offs that remote communities have over communication services. It also forecloses on alternative and likely more efficient mechanisms of achieving remote communications services, such as direct subsidy to remote communities, who could then contract directly themselves.

2. Problems with the current USO

A traditional USO awards an exclusive franchise in order to allow the carrier to reach an economy of scale. The focus of USO policy-making is on estimating the cost of the basic service, and calculating support based on assumptions of cost and revenue. The USO thus provides an artificial incentive to enter the market. As Corner has observed ‘Throughout its 20 year history the USO has been dogged by conflict and controversy: over the cost; over what exactly should be provided; and who should provide it’\(^3\).

2.1. Difficulties determining cost and revenue: Estimating the cost of the service is contentious and open to manipulation, particularly where the USO is awarded by Ministerial powers. The current 20-year contract with Telstra is a case in point, whereby Telstra was awarded an additional $100 million per annum in state revenue to provide the same services that it was already providing. Various commentators, including the current Parliamentary Secretary to the Minister of Communications, have speculated that this additional arbitrary amount enabled the Minister at the time to ‘land a deal’ with Telstra on the NBN\(^4\).


2.2. The USO restricts competition: The exclusive franchise model leaves customers deprived of possible benefits that might flow from competition. An obligation on all carriers is not preferable either as it would preclude players that wish to offer a niche service, or focus only on certain market segments.

Australia is one of the few countries to have attempted to introduce competition into the USO at the regional level. Two contestable USO pilot projects were undertaken in 2001. As no competitors emerged, in 2005 the Department of Communications IT and the Arts declared that there was no competition in the provision of the USO. The subsidy auction model we outline below may achieve greater success in introducing competition into telecommunication services in remote areas.

2.3. Technological change and the need for flexibility in the USO: The current USO model specifies a technology and type of service that was appropriate in the 1970s (the ‘standard telephone service’ (STS)) but bears little resemblance to today’s telecommunications landscape\(^5\). The STS is defined as using copper wire except in remote areas where there is no copper wire, in which instance Telstra may use High Capacity Radio Concentrator (HCRC), satellite or wireless technology. The NBN fixed infrastructure could provide a superior technology for providing communication services in areas where it exists. Moreover, mobile telephony and broadband is in greater demand than standard telephone lines. However, the USO does not allow for subsidies for mobile services except in remote areas, and not for services provided by entities other than Telstra.

There are many reasons why the narrow definition of the STS is not viable for the vast majority of households in remote Indigenous communities. Consumers in remote Australia are generally not able to access the STS as the cost of cables and trenches is still borne by the consumer (and are prohibitive). Research by the Swinburne Institute for Social Research, the Centre for Appropriate Technology, and the Central Land Council has found that Aboriginal people living in remote communities remain underserved due to different consumer preferences to the mainstream, including a preference for pre-paid billing, as well as practical difficulties when dealing with RSPs (see separate submission to this review from the Swinburne Institute for Social Research).

Telstra’s approach has been to instead provide payphones to remote communities with a population over 50. We reject the assumption by Telstra that the ‘notion of “shared resources” plays a stronger role in many remote Indigenous communities than in other areas. This means that the provision of “shared phones” such as payphones can be a more appropriate solution\(^6\).


Research by Rennie and colleagues has found that where mobile coverage exists, residents of remote communities are willing to pay for broadband and voice services, and do so at the individual or household level. For instance, in a survey of 100 residents in Ali Curung, all who were paying for internet were using pre-paid mobile broadband (USB modems and mobile devices). The researchers also found that when offered a choice between shared and household facilities, residents chose to manage their own household connections despite this being the more expensive option. These findings suggest that there is a market for communications in remote communities, but not one that complies with the definition of the STS under the USO (see RTIRC submission by the Swinburne Institute for Social Research on the Home Internet in Remote Communities project).

The *Telecommunications Legislation Amendment (Competition and Consumer Safeguards) Bill 2009* allowed that mobile and VoIP services would, under certain circumstances, be considered as an STS for the purpose of the USO\(^7\). To date this provision has not resulted in any significant improvement in services for residents of remote communities due to the cost of mobile infrastructure as provided by Australian telcos. As outlined below, low-cost solutions are now emerging due to innovations in mobile base station technology, as well as new satellite backhaul options. Technologies such as the low orbit satellites for backhaul (O3B) and low cost, robust mobile base station technology (such as Endaga, see below) could lead to new retail models that are responsive to remote community needs. Such innovations may require some form of support, but not necessarily to the current level of the USO (Broadband for the Bush has argued that if the USO were to cover the costs of backhaul it is possible that telecommunications services that aggregate demand across a number of communities could be viable\(^8\)). Although theoretically Telstra could itself invest in such technologies, the current USO arrangements do not provide any incentive for it to do so.

### 2.4. The USO has never been universal

The USO is essentially a procurement exercise – a means to select vendors to provide a service and to determine how much they should be paid. The *Indigenous Communications Program* was also procurement exercise, intended to fill gaps that the USO could not meet, including payphones in communities with a population under 50. Subsidies also exist for satellite broadband (the former *Australian Broadband Guarantee* and the current *NBN Interim Satellite Subsidy Scheme*) and the *VAST* satellite television service. Various government programs, including *Networking the Nation* and *RIPIA* were designed to address the infrastructure void in remote Australia, with varying degrees of success. The result of these programs is an

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\(^7\) Telstra currently provides some remote customers with satellite services.

uneven patchwork of infrastructure and programs across remote Australia, resulting pockets of digital exclusion and inclusion.

One positive consequence of these various experiments is that there is a great deal of knowledge amongst Indigenous organisations as to how to better meet the needs of remote-living Indigenous Australians, yet the USO provides no assistance for these organisations to do so in a sustainable manner.

2.5. Community and local decision-making in telecommunications services: Importantly, communities currently have no means of determining which services they would like to receive under the USO or who is best placed to provide them.

3. USO subsidy auctions

As outlined above, a USO mechanism is by nature economically inefficient. A core question for rethinking the USO is how to impose a universal service obligation on carriers whilst creating the least amount of market distortion. A USO subsidy auction is one way to set the price and allow the market to reveal the true cost of provision of the service.

3.1.1 How the USO subsidy auction works: It is possible that gains from trade can be achieved by further bargaining within a USO. A mutual gain could be realised where the contracted USO provider would pay a fee not to provide a service (to be released from the USO), and that fee would be transferred to the nominal recipient of the USO service, who would then use that cash to contract the service that they actually want. Both sides gain from this transaction, and would not take place unless that were the case.

Specifically, the company supplying the service could offer to effectively buy out the recipients of a USO (with a side payment of <C) where the marginal benefit they receive (B) is less than the marginal cost of supply (C) such that C-B = A, where A is then the surplus gain to the remote recipients.

This is the principle behind a reverse USO auction, where the USO holder bids to unwind the USO obligation, and that bid transfers to the recipients of the USO obligation. There will be a welfare gain (A) to the extent that the recipients prefer the cash with which they may then allocate to the telecommunication services they prefer at the margin of supply cost. This is now both economically efficient and maximizes individual consumer benefit. The difference is that the remote consumers will be (likely) purchasing a different product from the urban consumers. This model thus draws upon the local information about particular household and community needs and demands, and appropriate technologies to achieve those, as expressed though market demands put to tender for supply.

The auction subsidy model allows different market structures to be chosen in different areas, depending on the cost characteristics of the area, the relative efficiencies of the firms, and other factors including consumer preferences.

4. Possible services that could emerge in remote Indigenous communities as a result of a USO subsidy auction

In 2013, an independent ISP in Papua, Indonesia, turned their existing network into mobile broadband using a low cost, open source base station technology created by US start-up Endaga. The ability to access voice, SMS and data over mobile phones meant that those living in the village could easily reach people that were gathering supplies in town, a two day trip by road. Endaga (created by Kurtis Heimerl when he was a PhD student at the University of California, Berkeley, see endaga.com) provides a retail mechanism, including sim cards and internationally recognisable phone numbers that enable entrepreneurs to establish their own ‘microtelco’ and charge users for calls. The technology is robust, does not require expensive protection from the elements or airconditioning, and can be mounted in trees or on water towers as long as there is a power source.

A number of remote Indigenous communities in Mexico have also installed low cost mobile base stations, and are transmitting using spectrum that is made available for Indigenous community radio in places where that spectrum is neglected by national spectrum licensees (under Mexico’s constitution). The Mexican network was established through Rhizomatica, an NGO with a mission to ‘increase access to mobile telecommunications to the over 2 billion people without affordable coverage and the 700 million with none at all’. Previously, residents were using landlines that charged a per-minute fee, required standing in line, and using runners to inform each other of incoming calls. Following years of unsuccessful lobbying to get telecommunication companies to provide mobile broadband services, the communities decided to use their municipal money to establish their own community-owned and operated micro-telecommunications enterprises in rural Oaxaca, Mexico, with each base station costing approximately $US7500. In January 2015, Mexico assigned radiospectrum ‘cellular’ bands for ‘social use’, and created 15-year not-for-profit licences.

Mobile telephony has become a significant enabler in the developing world, used for financial transactions such as remittance payments from migrant workers to their home families, or assisting small-scale farmers and traders to share information. Often the ‘everyday’ means of being informed and communicating, write Goggin and Clark, can result in economic and social opportunities, ‘activating important dimensions of human rights in development, building upon and extending the well-recognised contribution of telecommunications’10.

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Galperin and Girard see microtelcos as key to overcoming inequities in mobile broadband access due to their creative approaches to capital, labour and technology that ‘maximize returns based on their knowledge of local conditions and demand preferences’. Microtelcos are thus capable of ‘finding business models (including payment collection mechanisms) appropriate to local conditions’ where large operators are reluctant to go\textsuperscript{11}.

What are the prospects for microtelcos in Australia’s remote Indigenous communities? One of the major impediments to microtelcos in many countries is spectrum regulation. Australian telecommunications spectrum regulation does not allow for ‘use it lose it’ style spectrum access that Indigenous communities in Mexico exploited. However, in Australia, individuals and organisations can apply for a public telecommunications service licence using various paired frequency ranges. Licence fees are set ‘having regard to spectrum location, geographical location, amount of spectrum occupied and coverage area authorised by the licence’.

One significant consideration in Australia is not the cost of the technology, but the cost of backhaul and interconnection with other networks. The cost of base station is perhaps affordable for small communities that have access to mining royalties and the like and equipment is likely to decrease (within the range of $3000-$6000 USD, although electricity and maintenance costs would also need to be factored in). Microtelcos can operate to a reasonable standard using satellite backhaul such as the O3B non-geostationary satellites (backed by Google and other investors), which orbit close to earth and therefore offers low latency speeds – making voice connections acceptable - and fast loading for data services. O3B was designed to serve the ‘Other 3 Billion’ that do not have internet connections and is providing satellite backhaul for mobile broadband in countries such as the Solomon Islands. However, O3B has warned that the spectrum fees for their base stations in Australia mean that backhaul costs for remote Australia are unreasonably high\textsuperscript{12}. Although companies such as Endaga provide phone numbers and interconnection to service providers, in 2015 the wholesale price of a single phone number (purchased by the service provider and presumably factored into call charges) is currently six times that of a phone number in the US, and incurs incoming call costs. Therefore, although microtelcos could emerge in remote Australia, providing a competitive call charge rate to consumers could be a challenge without subsidy.

Much of the existing research indicates that Indigenous people living in remote Australia prefer mobile telephony and pre-paid mobile broadband. However, Australia’s Universal Obligation provides subsidies to the USO provider (Telstra) for STS and payphones only. If the USO subsidy auctions were possible (see Weller 1998) then subsidies could be directed towards most socially desirable infrastructure, paving the way for the development of microtelcos in remote Australia.

\textsuperscript{12} O3B submission to the 5-year spectrum outlook, 2013-2017.