

**COMMUNICATIONS
ALLIANCE LTD**



Telecommunications Universal Service Obligation (USO) Review

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1 Background

In response to the Department of Communications Information Technology and the Arts (now the Department of Broadband, Communications and the Digital Economy) issues paper on universal service, Communications Alliance (CA) commenced an internal consultation with members on the issue of universal service reform.

A review of the universal service arrangements for telecommunications was welcomed by members. It provides a significant opportunity to explore an important issue and for the industry to grapple with the complexities of ensuring the objectives of universal service provision are achieved in a modern and competitive telecommunications industry.

CA has conducted extensive internal discussions on its position on universal service reform. This submission is put forward by CA in the spirit of providing a high-level contribution to the review of the USO – a contribution which takes a forward-looking perspective to the requirements for the provision of access to telecommunications services for all Australians in a broadband-enabled convergence environment.

Many of CA's members have made submissions directly to the Department. This submission is intended to be additional input to the submissions of individual members and not to derogate from the individual positions advanced.

There are elements of this submission that some members do not endorse. These are outlined in Annex A.

2 Executive Summary

The policy objective of the USO of the provision of reasonable access to basic voice telephony services for all Australians remains a sound objective.

The central question to be addressed is how best to achieve that policy objective in an environment of competing networks and technologies and in the context of existing Government-funded programmes to provide universal telephony services as well as access to broadband infrastructure and services.

It is submitted by CA that, for the purpose of considering how best to achieve the policy objective of universal access in the contemporary and future environment and context, the focus of the core policy objective be on access as a consumer right rather than on the obligation of one or more service providers.

Re-framing the issue to focus on the right of consumer access to a service should assist in considering the way forward but it requires some deep and fundamental considerations as to who will provide services if the market fails to meet the basic needs of customers. Notwithstanding this, if it can be achieved it has the potential to minimise many legacy issues that surround the universal service regime.

CA submits that the fundamental policy objective in the broadband-enabled environment is the provision of consumer access to a 'voice safety net.'

CA members support the following basic principles in designing policies around universal communications access:

1. Australian's should have the right to access a basic telecommunications service at a reasonable price which ensures a minimum standard of service that reflects modern community standards. As far as possible, the definition of the basic telecommunications service should be technology neutral and not carrier specific.
2. It is critical to identify the specific objectives underlying Government intervention to ensure access to communications and then to assess the best means of meeting those objectives. A universal service obligation is but one method of promoting universal access to communications.
3. The funding of universal access policies should be targeted, reasonable, equitable and efficient.

At the heart of defining the delivery mechanism for provision of access to the voice safety net service is the scope of the service. At present the standard telephone service (STS) regulates the baseline for the basic voice telephony service that consumers receive under the universal service regime.

CA submits that an open and transparent discussion around the definition and scope of the voice safety net service is required, in particular:

- the application and relevance of current features of the STS;
- existing Government-funded programmes providing access to broadband infrastructure and services;
- geographic scope;
- technological change and changing use of communications services;
- the voice quality required for a basic telephony service emergency services and national security requirements;
- affordability;

CA does not support the extension of the USO beyond voice. A universal service obligation covering broadband is likely to be costly and distort competition. Whilst broadband penetration is increasing, there is not clear public policy rationale to ensure universal supply of broadband services. Measures to support broadband networks in rural areas are likely to increase the availability of service to rural users. These more targeted programs, which often include a contestable element, are likely to be significantly less distorting than expanding the USO to include broadband.

The appropriate scope of the USO should be determined on the basis of an evaluation of the merits and costs of the range of policy options available to meet the Government's universal access goals. When defining the scope of the universal service goal, policymakers need to have regard to the cost of meeting the objective and the value to users of expanding the universal service features.

The issue of who should provide the service needs to take into account a potential range of alternative models, including contestability models.

The cost of providing access to a basic voice service is a question that needs to be considered in light of the scope which has been defined. It should also be noted that there is not unanimous support among the members for the proposition that there is a net cost from delivery of the USO.

The funding mechanism for delivery of the USO is currently by industry fund. On the basis that the cost, governance and transparency of the universal service is reviewed and appropriately defined there is majority support from CA members that the delivery of the

policy objective of the provision of reasonable access to telecommunications services should be funded by Government. The submissions of individual CA members provide detail on this aspect.

3 Overview

The telecommunications industry represented by CA members is strongly supportive of provisions which enable access to basic telecommunications services to all Australians regardless of their location. All members recognise that the design of universal service policy has important and far reaching implications for competition in the industry. Universal service policy must be consistent with industry policies relating to network deployment, competition and interconnection.

The primary purpose of the universal service obligation (USO) is to enable all persons in Australia to have reasonable – and equitable - access to standard telephone services wherever they reside or carry on business.¹ The obligation requires the universal service provider to supply a standard telephone service (STS). In effect this means that the definition of the standard telephone service determines the nature of the obligation.

The market for telecommunications service is constantly evolving. The market is very different from the one in which the USO was first introduced. Consumers access an increasingly wide variety of technologies and services to fulfil their communications needs. Many users would not regard the regulatory definition of a standard telephony service as one that matches the service which they use for communication. Many consumers use mobile services and voice over internet protocol (VoIP) services as their primary means of communication. The trend suggesting increased use of alternative services makes it more difficult to define what represents equitable access to telecommunications services in Australia.

CA submits that an open and transparent discussion regarding the basic requirements of users to a communications service is required in order to frame the requirements for the access to a voice safety net in a broadband-enabled convergence environment.

All Australians have the right to a ‘social safety net’ service to enable voice communications. Access to voice communications is essential to avoid social exclusion, especially in remote areas.

The definition of the social safety net service has critical implications for the operation of the universal service regime including:

- Whether it satisfies the basic needs of users who live in predominantly geographically remote areas.
- The cost of providing the service in high-cost areas and the consequential costs associated with subsidising below cost pricing (e.g. the cost associated with implementing an industry fund).
- The potential for alternative providers to meet the needs of users and the impact on competition in related markets.

The future of data services is broadband. The Government has announced a policy to participate in the development of a high-speed fibre broadband network which reaches around 98 percent of the population. In addition, there are various Government

¹ Also provides for access to payphones.

programs, including the digital data service obligation (DDSO), HiBIS and Broadband Connect which are targeted to provide broadband in rural areas. The existence of these programs and the new programs being developed by the Government should be considered in the context of universal service policies for basic voice services to ensure that duplication is avoided.

Technological change creates opportunities for numerous points of access into the home. The development of next generation networks is likely to lower the cost of access into the home, but the pace of network development is likely to be faster in metropolitan areas than in rural areas. Over time these networks may have the potential to change the cost of access in areas that might currently be considered uneconomic. In the meantime, the development of universal service policies should reflect community standards in relation to access to basic voice telephony including basic quality requirements, personal safety, national security and affordability. Affordability should be established in an objective manner which achieves equity without distorting potentially competitive markets.

4 Principles and objectives

Fundamentally, a number of underlying objectives for the USO can be identified. Social objectives tend to focus on the role of the USO in ensuring (reasonable) access to particular services that are seen as being important to physical or social well-being such as emergency services, public services and general information services. In addition, where access to a particular service is already widespread, supporting access to the remaining unconnected segment of the population may be seen as fulfilling a particular equity objective.

The main economic objective is that overall economic welfare can be sometimes increased by subsidising additional people to join a communications network. In particular, the new subscribers can bring benefits to existing subscribers in being able to call and to be called by the new subscribers (i.e., internalising network externalities) and these benefits outweigh the cost of the subsidy. Whilst these economic benefits provide a rationale for subsidising access for some users, they are unlikely to be sufficient to support a policy of subsidising *universal* access (for all users).

CA members support the following basic principles in designing policies around universal communications access:

1. Australian's should have the right to access a basic telecommunications service at a reasonable price which ensures a minimum standard of service that reflects modern community standards. As far as possible, the definition of the basic telecommunications service should be technology neutral and not carrier specific.
2. It is critical to identify the specific objectives underlying Government intervention to ensure access to communications and then to assess the best means of meeting those objectives. A universal service obligation is but one method of promoting universal access to communications.
3. The funding of universal access policies should be targeted, reasonable, equitable and efficient.

The appropriate scope of the USO should be determined on the basis of an evaluation of the merits and costs of the range of policy options available to meet the Government's universal access goals. When defining the scope of the universal service goal,

policymakers need to have regard to the cost of meeting the objective and the value to users of expanding the universal service features.

5 Scope of the service

5.1 Application and relevance of Standard Telephone Service requirements

At present the standard telephone service (STS) regulates the baseline for the basic voice telephony service that consumers receive under the universal service regime. CA submits that a comprehensive review of the requirements for basic access to telephony services is required.

The principle supported by CA is that the basic telecommunications service should be a 'voice safety net'. The precise scope of the service should be developed in an open and transparent discussion between industry, Government and relevant stakeholders.

CA submits that the scope of the presently defined STS is possibly beyond what is required for a 'voice safety net' service. The effect of this is to increase the cost of providing universal access and to create a barrier to the efficient functioning of the market in which alternative networks may have otherwise been able to meet the basic needs of users for voice telephony services.

The latter effect is particularly relevant in the context of other Government programs which promote network rollout in high cost areas. These include the Broadband Connect program announced by the previous Government and this Government's policy of facilitating the rollout of a fibre based network to 98 percent of the Australia population.

The features of the STS are expansive. The features and consequential obligations of universal service provision of the STS include:

- customer service guarantees (CSGs)
- free emergency services access
- operator assisted services
- directory assistance services
- pre-selection capability
- itemised billing
- calling line identification
- number portability
- membership of the telecommunications industry ombudsman (TIO)
- priority assistance
- the option of untimed local calls
- suitable equipment for customers with disabilities
- interception capability

In addition there are various other consumer protection measures including the retail price controls that apply to the universally provided service.

A comprehensive review of the definition of the basic telephony service should consider technological change in the industry, the changing use of communications services and community views as to minimum standards of a basic telephony service.

As noted above CA considers that the scope of the existing universal service (STS) is not reflective of a voice safety net and includes features which are not needed. The inclusion of these features does not advance social inclusion or other objectives of the universal service. They also come at great cost.

In considering the scope of the universal service, the Government should consider the value to consumers of any features of the service which are beyond the minimum standards expected of a voice service and balance those against the additional costs associated with providing those features, including the costs associated with distorting competition (from below cost pricing) and from raising taxes or levies to fund those additional features.

For example, including data capability in the scope of the universal service definition creates value for users as it creates opportunities for data communications.² For some users this will increase their social inclusion (because it will allow email communications), for others it will create business opportunities (because it allows facsimile services). Balancing against these benefits is the cost associated in providing data services, particularly in remote locations. Higher data speeds require greater bandwidth and hence greater costs. Higher universal service costs mean greater distortions in prices for all services because the cost of the obligation is funded via an industry levy (see below). When considering options regarding different obligations (e.g., data speed capability) in the universal service the Government should explicitly consider the impact on social inclusion from each alternative against the additional cost created by each option.

5.2 Existing Government programmes promoting broadband access

Broadband penetration is increasingly rapidly in Australia. In December 2007 the ABS reports that around 43 percent of households had broadband in 2006-07, an increase of 52 percent on the previous year.³ Whilst xDSL technologies dominate the recent growth in broadband connection⁴, many technologies are available including cable, wireless local loop and mobile (HSDPA).

Governments place significant emphasis on achieving high penetration of broadband - both for business and for residential users - and monitor their success via various international comparisons (e.g., OECD statistics). There are various laws, policies and programs to encourage broadband take up in Australia. These including measures to provide access to unbundled network elements (under Part XIC of the Trade Practices Act), voucher arrangements which subsidise satellite broadband connect (e.g., HiBIS) and network development subsidies (e.g., Broadband Connect). The Government has also announced its intention to support the development of a fibre based high-speed broadband network that reaches 98 percent of the population.

Broadband penetration is higher in metropolitan areas. The ABS report that 49 percent of metropolitan households have broadband access compare to 34 percent of non-metropolitan areas.

There are a range of policy measures which might be employed to increase broadband penetration. These include measures such as those already being undertaken or planned for Australia (see above). Imposing a broadband universal service obligation is

² We note that there is no material obligation to provide data capability currently under the universal service regime.

³ ABS, *Household use of Information Technology, 2006-07*, 814 6.0

⁴ ACMA, *Telecommunications Today*, January 2008, p. 16.

likely to be excessive. Whilst broadband is growing significantly, it is unclear whether policies to universal access are desirable given:

- The uncertain demand for broadband. Whilst penetration rates are increasing, in some mature markets penetration is significantly less than 100 percent.
- Technology is changing rapidly and it is therefore uncertain as to which single or mix of technologies will prevail. This will depend on the eventual needs of users for bandwidth.
- The economics of rolling out broadband networks are changing. Additional revenue streams are being identified and the costs of network deployment are falling such that currently uneconomic areas may emerge as profitable in the future.

In addition, subsidies that favour one technology or operator are likely to create market distortions both in terms of distorting investment in future competing networks and the likely significant distortions associated with funding the cost associated with providing broadband universally.

In Australia the mix of historic Government policies (including the universal service obligation, DDSO, Broadband Connect, HiBIS and various other programs) is likely to result in a range of subsidised means of access into some homes in areas which might be considered uneconomic. For example, a home in a geographically remote area may have a standard telephony service provided at below cost under the USO scheme as well as a satellite/wireless connection available under the DDSO, HiBIS or Broadband Connect programs.

Assessing the capacity of these new technologies and networks to independently⁵ meet the requirement of a basic telephony service is an essential component of universal service policy design. Inherent in universal service design is a connection between the definition of the service, the ability of different networks to deliver that service and the identification of areas which are uneconomic to serve by one or more providers or capable of being contested under some universal service procurement process (such as a voucher regime).

It should be emphasised that CA does not support the extension of the USO beyond basic voice services at a fixed location. A universal service obligation covering broadband is likely to be costly and distort competition. Whilst broadband penetration is increasing, there is not clear public policy rationale to ensure universal supply of broadband services. Measure to support broadband networks in rural areas are likely to increase the availability of service to rural users. These more targeted programs, which often include a contestable element, are likely to be significantly less distorting than expanding the USO to include broadband.

5.3 Technological change and changing use of communications services

Users are increasingly using a range of alternative technologies to access voice communications services.

The majority of users use fixed line telephony services as their primary method of communications. Increasingly, users appear to be substituting fixed line services for mobile services. The extent of the substitution between fixed and mobile services is

⁵ That is, networks that do not rely on other operator's infrastructure. This would not likely include networks that rely on the unbundled local loop.

reflected in the apparent decline in the number of fixed connections and the increase in mobile connections. The number of fixed connections fell modestly from 11.66 million in 2003-04 to 11.26 million in 2005-06 whilst the number of mobile connections rose from 16.48 million to 19.76 million for the same period.⁶

In a recent ACMA survey, the majority of users indicated that they have (and use) both mobile and fixed telephony services. Around 55 percent of users indicated that they used their fixed service more than their mobile service. Around 10 percent of users indicated that their primary use of their fixed service was for internet access.

Expansions in mobile coverage may bring greater substitution opportunities for basic voice services to more people. In Australia the coverage of the fixed network is to 100 percent of the population. For mobile networks, carriers report between 96 percent and 98 percent coverage. As do Government programs to supply satellite services to users at discounted prices.

VoIP technology can provide voice calls using fixed or wireless broadband services connect to computer (attached to the computer is a handset or microphone and earpiece) or using a mobile phone with broadband capability. The use of VoIP appears to be increasing. ACMA report that around 80 percent of broadband users are aware of VoIP and around 20 have used a broadband connection for voice communications. In the United Kingdom, around 10 percent of households used VoIP in the last quarter of 2006, compared to 5 percent in the last quarter of 2005 although that same research indicates that all surveyed VoIP users had some other means to accessing telephony services at home.⁷ An OECD report predicts that over 12 percent of broadband users will use VoIP services by 2010.

The changing nature of technology use for communications has resulted in significant price reductions and changes in the way in which operators charge for calls. Mobile services are commonly sold as a bundle of free calls for a fixed amount or as a pre-pay service in which users can control the amount they wish to budget for outgoing calls.

In metropolitan areas, broadband connections have increased significantly. The majority of broadband connections use digital subscriber line (DSL) technology utilising copper into the home. In non-metropolitan areas the growth in broadband connections may increase with additional government programs to support new networks and the modernisation of existing networks.

An extension of the USO to mobile services is also not supported by CA. The mobile market in Australia is characterised in most areas by multiple infrastructure operators competing on all facets of price and quality. CA considers that the USO should not be used to subsidise the supply of services, such as mobile network services that would be delivered without subsidy. It is notable that in 2005 the European Commission concluded that:⁸

“... the evidence demonstrates that the competitive provision of mobile communications has resulted in consumers already having widespread affordable access to mobile communications. The conditions for including mobile

⁶ ACMA Communications report 2005-06, p27.

⁷ Ofcom communications tracking survey Q.4 2006

⁸ European Commission, On the Review of the Scope of Universal Service in accordance with Article 15 of Directive 2002/22/EC.

communications within the scope of universal service (as set out in the Directive) are therefore not fulfilled."

5.4 The requirements of a basic telephony service

Views as to what constitutes a basic telephony service are changing. Younger generation are greater users of alternative technologies. For example, younger people are more likely to report that their mobile phone is either the primary or only means of accessing communications services.

Notwithstanding such developments, there are likely to be some minimum standards for a telephony services to meet community expectations. These might include standards that ensure:

- Basic voice quality
- Personal safety
- National security
- Affordability

The minimum community expectation for a social safety net is likely to be one that allows for any-to-any connectivity at a reasonable **quality of voice service**. An acceptable quality of service may be less than what is mandated for public switch telephony networks.⁹ The development of an acceptable basic standard for voice communication should be technology neutral.

The requirement to provide data service under the universal service regime may materially affect the cost of providing service to users in remote areas. It will be important to include in the public consideration of the universal service definition an analysis of the costs and benefits of providing data services below cost.

5.5 Emergency services and national security requirements

The ability to call **emergency services** is an essential element of any basic communications device. The ability to call emergency services free of charge is a requirement of all telecommunications services in Australia including fixed, mobile and VoIP services offered over broadband networks.¹⁰

As defined the standard telephony service can be provided over fixed, satellite, mobile and wireless local loop networks. However, in order to ensure 24 hour access to emergency services *in the home* additional equipment may be required to what is typically supplied with services over satellite, mobile and wireless local loop networks. These might include a 'fixed' handset for a mobile service, an external antenna to achieve coverage in the home and an independent power supply. This additional equipment, particularly the supply of an independent power supply, adds significant additional cost to providing services in remote locations, e.g. the power might come from solar panels with large batteries.

A transparent discussion on the scope of a basic telephony should consider whether a fixed line in the home is needed for personal safety. This would include recognition that there are more mobile handsets than fixed lines and are mobiles are more commonly

⁹ See Quality of Service Code C519

¹⁰ *Telecommunications (Emergency Call Service) Amendment Determination 2007 (No. 1)*. It is also a requirement to provide location information

more accessible in times of emergency where coverage is available. According to ACMA around 63 percent of calls to emergency services in 2005-06 were calls from mobile phones.¹¹ In addition, many customers use customer equipment in their homes to make calls on the PSTN that are mains powered. Standards only require that mains-powered equipment support the calling to emergency service numbers for 30 minutes following the loss of mains power.

Intercepting calls can be important to **national security** and is a necessary requirement for universally provided voice services.

5.6 Affordability

Affordability of access is plainly important to achieving policies of universal access. Avoiding social exclusion from people's inability to afford basic communications access is a key objective of policy makers around the world.¹² For most consumers in metropolitan areas, including the disadvantaged, competition has delivered services that substantially meet their requirements.¹³ These include pre-pay services on both fixed and mobile networks.

The focus of the universal service regime in Australia has largely been around ensuring universal access in high-cost areas. The universal service obligation requires users in all areas to get *reasonable access on an equitable basis*. In practice, this means that there is regulated uniformity of charges for retail connection charges and monthly line rentals for basic telephony services in low and high cost areas:

- The standard connection fee is \$299 (less for customers entitled to a concession) for new connections regardless of location. In addition, the universal service provider can charge for network extensions but this is capped at \$1,540. The customer must cover trenching costs from their premises to the telephone network.
- Telstra (also the designated universal service provider) must offer basic line rental services to users in non-metropolitan areas at the same (or lower) price as it offers users in metropolitan areas.¹⁴

The effect of the current mix of regulations is to require a standard telephone service to be offered in both metropolitan and non-metropolitan areas with the price of the basic line rental service in non-metropolitan areas being set with reference to the regulated retail price of the basic line rental service in metropolitan areas.¹⁵ CA considers that this approach should be reviewed.

There are numerous competing providers in most metropolitan areas utilising a range of technologies to supply services to users. Regulating retail prices in these circumstances is

¹¹ ACMA Communications Report 2005-06, Appendix 6.2.

¹² Under the European Union framework the Universal Service Directive defines universal service as the "minimum set of services, of specified quality to which all end-users have access, at an affordable price in light of national conditions, without distorting competition" (Article 1.2).

¹³ Albeit for many disadvantaged the ability to afford even these services is dependent on income support from the Government.

¹⁴ This requirement is a result of the combination of obligations between the universal service regime and the retail price control regime. Telstra Carrier Charges—Price Control Arrangements, Notification and Disallowance Determination No. 1 of 2005 (Amendment No. 1 of 2006).

¹⁵ Local call charges are also averaged across metropolitan and non-metropolitan areas.

likely to be unnecessary to protect consumers' interests.¹⁶ In areas in which there is only one provider there may be a role for price and service quality regulation. However, the Government should consider de-coupling the regulation of prices and quality of service across metropolitan and non-metropolitan areas so as to minimise distortions in potentially competitive markets.

In order to determine affordability and achieve equity objectives it would be reasonable for the Government to use emerging service offerings and pricing outcomes in metropolitan areas to define the needs (and preferences) of consumers being revealed in a market which is less encumbered by retail regulatory distortions. These could be used to determine the requirements of users to basic voice communications in high cost areas and to set affordable prices.

6 By whom should the service be delivered?

Ideally, the focus of policies should not be to enforce an obligation on industry or particular service providers. These policies would include measures to improve the functioning of the market, e.g., lightening retail price regulation to provide greater pricing flexibility, the allocation of additional low frequency band spectrum and improved planning processes for network deployment. Whilst such policy measures may not achieve universal access they should be considered by Government prior to considering more interventionist policies such as a seeking network and services via a procurement process or imposing universal service obligations.

It should generally be agreeable that the USO should not be used to subsidise the supply of services that would be delivered without the subsidy. Potential exceptions would be where the USO could be shown to be an efficient means of meeting distributional objectives (this seems unlikely) or where a general subsidy is necessary because of the inability to precisely target the subsidy at only the users who would not otherwise afford the service (even here the costs and benefits of such an approach would need to be carefully examined).

Accepting that clear goals can be established in relation to universal access to basic telecommunications, it is necessary to consider the extent to which these goals can be achieved through the market or whether additional policy measures are required. A range of policy measures are potentially useful including direct funding of network rollouts and procurement of services through an auction or tender process or USO obligation on service providers.

The Government has adopted a range of direct funding and quasi-procurement processes in its broadband policies that have incorporated elements of contestability. The benefits of contestability in a universal service regime arise from the potential for competition for the market or competition within the market. With some notable exceptions (Latin America and the extended zone tender in Australia) practical examples of successful contestability regimes are limited. These contestability regimes appear to have been successful because they were applied in remote areas with no existing incumbent network.

¹⁶ Even in the case of monopoly provision, regulating a single price will likely damage outcomes for end users as the regulated price is likely to be set inefficiently and will limit the level of pro-consumer price discrimination.

The range of contestability models that could be introduced including tenders/auctions, play or pay and schemes and demand side approaches such as vouchers.

The primary benefit of auctions or tender arrangements is to provide a market-type mechanism to determine the level of subsidy needed to provide a service. They are also likely to lead to the obligation being imposed on the most efficient provider.

Whilst auction mechanisms for universal services are well explored in the literature, their application to USO arrangements are limited (see Annexure B), though in cases where they have been applied they have generally been considered successful. The circumstances of the market, its history, the objectives and the service characteristics are all determinative of the success of auctions.

Play or pay models are used in some parts of the European Union. Belgium has a play or pay universal service model. Play or pay models give operators the option of providing universal services (playing) or compensating operators who do (paying). Whilst attractive because they introduce choice into universal service provisions, such models rely heavily on the correct level of subsidy to encourage efficient decisions regarding playing or paying. They also require significant monitoring to ensure operators who are said to be playing are not avoiding their obligation by, for example, offering a low quality services.

Voucher arrangements have attractive properties where there is the potential for multiple providers. They introduce choice to consumers and encourage cost efficiency and quality improvements in supplying universal services. Experience in the United States suggests that vouchers do well in delivering universal services to low income groups. A type of voucher arrangement (i.e., a uniform per customer subsidy) has also been used in the United States to support universal service delivery in high-cost areas (see Annex B). The high-cost fund has grown from around US\$2.6 billion in 2001 to around US\$4.2 billion in 2006 and as a result has been capped on an interim basis. The FCC is exploring alternative contestability models for the delivery of universal services in high-cost areas, including reverse auctions and/or modifications to the existing per customer subsidy arrangement (e.g., cost modelling and disaggregation levels of support to address cream-skimming).

Whether the universal service provider is appointed via a contestability arrangement or is simply designated by Government, there are likely to be significant benefits in designing a regime that does not discriminate between technologies and allows services to be provided in the most cost-effective manner.

To ensure efficient service delivery the scope of the basic voice service needs to be technology neutral. This requires that the characteristics of the service be defined by the services outcomes rather than the inputs needed to deliver the outcomes. This approach gives flexibility to the universal service provider and may create opportunities for contestable supply.

7 Cost of providing access to a basic voice service

The diversity of members in the CA membership means that agreement on many costing issues is unlikely, and there is disagreement among CA members as to whether or not there is a net cost of providing the USO (see Annex A). However, where a net USO cost is shown to exist due to the provision of basic access services in uneconomic areas,

whether it is paid by targeted direct funding or via a universal service fund is a secondary issue.

If there is the potential for multiple providers to be the provider then there may be the option to determine the net cost by a competitive process such as a downward auction. Such a process could also select the least cost operator(s) to provide the service. Contestability arrangements need to be carefully designed in order to reveal the true cost of providing universal services in uneconomic areas.

In principle, the net cost of the providing basic access universally should be calculated as the amount of money that would be just sufficient to leave the provider no worse off from providing the service than if that provider did not provide the service.

Accurately estimating the net cost is however inherently difficult. This is predominantly because of the conceptual and practical issues that need to be established in order to correctly identify and cost uneconomic areas and customers. Additional layers of complexity are required when issues are raised regarding the degree of optimisation in the network design (technology choice), the appropriate return on capital and the appropriate profile for the return of capital.

The experience in most jurisdictions is one of dispute and controversy in costing universal service obligations (see Annex A). In Australia, there has been significant inconsistency in the outcomes of various reviews of the likely net cost. Attempts at estimating the net cost demonstrate limited transparency, arbitrary assumptions and poor methodologies.

CA members have a variety of views as to how costing issues could be resolved. The individual submissions of members provide details on their respective views. Notwithstanding these, a consistency of approach to costing the USO is likely to be of benefit to all operators. Uncertainty regarding the level of net costs creates risks for operators and lessens their ability to appropriately reflect cost changes in pricing and investment decisions. The industry would benefit from a more predictable and consistent approach to estimating the net cost of the USO.

8 Funding for delivering a policy objective

On the basis that the cost, governance and transparency of the universal service is reviewed and appropriately defined there is majority support from CA members that the delivery of the policy objective of the provision of reasonable access to telecommunications services should be funded by Government.

Government funding is not supported by all members. The submissions of individual CA members provide detail on this aspect.

Public finance theory has identified a set of principles for optimal taxation as well as an analytical approach to estimate the losses to the economy that can result from inefficient taxation models. Standard taxation principles include:¹⁷

1. Economic efficiency. This has two components:

¹⁷ A similar set of principles is set out in a document of the European Commission's CCCTB's Working Group, *General taxation principles (CCCTB/WP\001Rev1\doc\en)*.

- a) First, the tax regime should minimise the administrative burden (to both payees and the collection agency) associated with collecting the required revenue.
 - b) Second, and generally more importantly, the tax should be levied in a way to minimise distortions to production and consumption decisions.
2. Vertical equity – taxation should reflect ability to pay with more tax raised from individuals with higher income.
 3. Horizontal equity – people in similar economic circumstances should pay similar levels of tax (i.e., the tax system should not arbitrarily discriminate between different types of taxpayers).
 4. Competitive neutrality – taxes should not distort competition (such as between different firms offering similar services) or business decisions (such as whether to carry out an activity in-house or whether to out-source that activity to an external supplier).
 5. Enforceability, simplicity, transparency and certainty – firms and individuals should be able to understand and accurately predict the implications of the tax. A necessary condition for this to be true is that the tax law must be able to be enforced in the manner in which it is actually legislated.

A detailed comparison of the policy merits of general taxation and industry funds is presented in Annex C.

ANNEX A – Member objections

There are elements of this submission that some members do not endorse. In addition, a number of members wish to make clear that their participation in this industry submission does not in any way detract from the points made in their individual submissions. Specifically:

- A number of members including Optus, Macquarie Telecommunications, Hutchison and Vodafone do not consider there to be a net cost associated with the universal service obligation.
- AAPT's position is that it has not yet been proven that there is a net cost associated with the USO.
- Telstra considers there to be a net cost associated with the imposition of the universal service obligation for which it is inadequately compensated.
- AAPT does not support general taxation funding of the universal service obligation in the current market.

ANNEX B – International survey

This section reviews USO arrangements in a number of countries (Canada, Chile and Peru, the EU Member States, New Zealand, and the USA) as well as proposals for reform in these countries. USO funding arrangements have tended to be established for a relatively long period in countries such as the US, Canada, and New Zealand reflecting their large, sparsely populated rural areas as well as the relatively early development of competition – as such, USO arrangements in these countries bear similarities with those in Australia. In most EU Member States on the other hand there has been relatively little experience with competitive models for USO provision and only 4 of the 27 EU Member States currently have industry funds in place. USO arrangements in Latin America are particularly innovative and may provide insights into means of meeting universal access objectives while not imposing large costs on other telecommunications users in those States.

Key findings of relevance to the reform of the USO in Australia are:

- The EU displays a significant variety of USO arrangements across Member States even within a common overall regulatory framework for the USO. These range from the acceptance that the market itself will meet universal access goals without the need for USO regulation (or at least the full set of USO services being subject to regulation) in some Member States to the more traditional practice of requiring the incumbent operator to both provide and fund the USO in other Member States.
- The prominence given to political imperatives to universal service in the United States has led to rapid growth in the universal service regime and problems containing the size of the universal service fund.
- In the United States, mobile operators have been successful in contesting the provision of universal services in so called high-cost areas when allowed a subsidy based on the fixed line incumbent's cost.
- Latin American countries have been successful in introducing reverse auctions for universal service provision in previously unserved areas. The governments have used general taxation funding to attract substantial additional private investment.
- Detailed costing and funding USO models adopted in Canada and New Zealand draw significant regulatory resources and are subject to detailed debate and contention, echoing the experience in Australia.
- In jurisdictions surveyed, payphone provision appeared to be a potentially contestable service for many areas.

Canada

In Canada, the USO only applies to basic telephony services.

The USO was established in 2000 and is supported by a national contribution fund (NCF).¹⁸

The fund seeks to subsidize the high cost of residential local services in rural and remote areas. Contributions to the NCF are based on revenues from telecommunications service providers. The regulator, the CRTC, oversees the fund. Local monopoly operators apply for a payment from the fund.

¹⁸ <http://www.crtc.gc.ca/archive/ENG/Decisions/2000/DI2000-745.htm>

The CRTC assesses the subsidy claims of each local monopoly operator based on the “costs of providing residential primary exchange service in high-cost serving areas” methodology which includes a detailed assessment of input parameters. The approach is a forward looking long run incremental costing including a mark-up for common costs which is generally set at 15%.¹⁹

Intangible benefits do not play an explicit role in costing the USO, though the CRTC has determined that local operators receive intangible benefits but that such benefits may be somewhat offset by the advantage competing operators have in serving primarily the more profitable customers in low-cost serving areas. In calculating payments from the fund local operators are deemed to receive an implicit contribution (of around C\$5 per month) from other local services.

Once the claim is assessed, a per-line subsidy is paid to local operators in high-cost service areas (though at least one local operator is on a per-minute subsidy).²⁰

Fixed and mobile carriers pay a fixed percentage of their eligible telecommunication revenues²¹ towards the USO subsidy. Carriers that have less than C\$10 million in eligible revenue can apply for an exemption from contributing to the subsidy.

In 2007, the CRTC set this percentage at around 1 percent. It has fallen substantially. When the fund was established in 2001 it was set at 4.5 percent.

Chile and Peru²²

For Latin American countries, Chile has been at the forefront of regulatory reform in telecommunications. To address low penetration of telephony the Government established a fund, the Fondo de Desarrollo de Telecomunicaciones (FDT) to provide payphones in rural and low income urban areas that have low income and low telephone density.

Funds are distributed by competitive tender for investment in telecommunication services. While the fund was initially limited to subsidies for payphones, it has been extended to ‘tele-centres’²³ and broadcasting services in rural and low income areas. The fund is administered by the Chilean regulatory authority, Subtel.

The subsidy is funded directly by the Chilean Government.

The process adopted by Subtel has been described in a number of case studies.²⁴ They note that in selecting projects for auction there is an initial engineering assessment and cost benefit analyses to determine the value of potential projects. Projects that are not commercial viable but have high social value are put to auction. Subsidies are distributed through a competitive bidding process where bids are assessed based on the lowest subsidy required (even if additional services are offered).

¹⁹ Canada does not have a national wide incumbent operator but has a number of local (franchise) monopolies that act as the universal service provider..

²⁰ <http://www.crtc.gc.ca/archive/ENG/Decisions/2007/dt2007-5.htm>

²¹ Eligible revenue is revenue net of inter-carrier payments.

²² These funds might more accurately be described as universal “access” funds than universal service funds as they facilitate public access to services (via payphones) rather than facilitating telephony services to homes and private residences.

²³ Telecentre are centre with affordably priced communications services including internet connection and computing facilities.

²⁴ <http://rru.worldbank.org/Documents/PapersLinks/1222.pdf>

The bidding documents include all terms, obligations, allowable tariffs (including cost based incoming tariffs) and rules. No exclusivity is given to winning bidders and tender documents are generally technology neutral.

The bidding process resulted in many 'zero' or very low bids in many un-served areas. This suggests that opening up of a market quickly yields competition benefits, that is, the prospect of entry from one firm was viewed as a threat by other firms leading to competition to be the first supplier in an area. However, in many other areas, the incumbent won the auctions at the maximum allowable subsidies (which were set in the cost benefit study) and new entrants only won auctions in case when the incumbent failed to bid.

Mobile penetration in Chile is now around 84%.²⁵

In Peru, the regulatory authority, Osiptel sought to address the high cost rural areas not being served by privatised businesses, by creating a fund with a directive to improve telecommunications services in Peru's rural regions through private participation. The fund, called Fondo de Inversion en Telecomunicaciones (FITEL), collects a 1% levy charged on gross invoice annual income (less taxes) of all telecommunications companies.

Osiptel offered a one off subsidy to telecommunications carriers to develop telecommunications networks in the areas identified by the government. The carriers participated in a one-round descending auction (subject to maximum and minimum subsidy limits).

The winning bidder receives a 20 year concession, requiring that "the installation of one public pay phone in each rural locality as in the tender, providing access to local and long-distance voice, and narrow band communications, and one point of public access to the Internet in each district capital." ²⁶ The subsidy is disbursed over five years. The winning bidder was the one with the lowest subsidy requirement.

It is understood that the technology of choice for the network deployed was a combination of satellite (VSATs) and fixed wireless local loops. This was facilitated by the allocation of the AMPS band spectrum to the winners of the auctions who wished to use fixed wireless solutions for the provision of universal service.²⁷

The success of the Peruvian auctions is reflected in the fact that the average subsidy required was around ¼ of the maximum allowable subsidy.²⁸

In addition to Chile and Peru, Latin America has USO funds operating in Argentina, Bolivia, Brazil, Colombia, Dominican Republic, Guatemala, and Nicaragua. The success of tendering arrangements is an important lesson for new and future EU Member states. Indeed, tenders for tele-centres with very similar features to those adopted in Chile and Peru have been adopted in Romania.²⁹

²⁵ <http://www.budde.com.au/Reports/Contents/Chile-Mobile-Market-Overview-and-Statistics-1907.html>

²⁶ <http://www.geocities.com/sidheartraja/documents/Paper-FINAL.pdf>

²⁷ <http://www.geocities.com/sidheartraja/documents/Paper-FINAL.pdf>

²⁸ <http://scid.stanford.edu/pdf/SCID264.pdf>

²⁹ http://ec.europa.eu/information_society/policy/ecomms/doc/info_centre/public_consult/universal_service/comments/anrc_ro.pdf

Part of the lesson learned from Latin America is the leverage which can be gained from government funding. That is, reverse auctions are a means to achieving substantial private investment with limited impact on the general tax system.

European Union

USO arrangements in the EU are governed by the EU's Universal Service Directive. As we discuss in this section, the Directive contains a number of key principles that would be expected in a modern USO regime such as providing the opportunity for competitive provision of USO services and determining appropriate funding arrangements. Despite the Directive, in most individual EU Member States the USO continues to be provided by the incumbent operator and that operator does not receive external funding for the cost of the USO. However, the role for non-incumbent operators to provide at least some USO services is growing and additional Member States can be expected to introduce industry funds going forward.

The EU's Universal Service Directive defines universal service as the "minimum set of services, of specified quality to which all end-users have access, at an affordable price in the light of national conditions, without distorting competition" (Art. 1.2).

The European Commission has stated the purpose of the USO as providing a "safety net of universal service for those whose financial resources or geographical location do not allow them to access the basic services that are already available to and used by the great majority of citizens and which are considered essential for participation in society."³⁰

The current scope consists of:

- A connection to the public telephone network at a fixed location supporting voice and functional access to the Internet (defined with reference to technologies used by a majority of subscribers and technological feasibility and potentially being wireless or wired technologies capable of providing the service at a fixed location).
- Access to publicly available telephone services and including public payphone and directory services and special measures for disabled users.

The current US Directive does require all undertakings (operators) to be given the opportunity to be designated to fulfil universal service obligations and that obligations may only be imposed where the market fails to deliver particular services. Operators are required to be designated to provide all or part of the USO using an efficient, objective, transparent and non-discriminatory mechanism.

The current Directive provides for Member States to finance any net costs of universal service obligations either by using public funds under transparent conditions or by setting up a sector-specific fund to which all undertakings active in the market would have to contribute.

There are a number of significant differences in the implementation of Universal Service across the EU.

USO provision across the EU

³⁰ European Commission, Communications on the Review of the Scope of Universal Service in accordance with Article 15 of Directive 2002/22/EC, 24 May 2005, p.2.

Following are noteworthy features of the arrangements for USO provision in particular EU Member States.

Only two Member States (Germany and Luxembourg) have not designated any USO provider because they consider that universal access can be achieved by the market. Some other Member States have withdrawn particular services from the USO designation (e.g. the provision of access at a fixed location in the Czech Republic and the provision of directory services and public payphones in Estonia).

Open tenders to determine the USO provider have been used in 6 Member States (i.e. Cyprus, the Czech Republic, Estonia, Hungary, Poland and Slovenia). In other cases, the designation process was via a public consultation and administrative selection following calls for expressions of interest, i.e. a beauty contest (used in Ireland, the UK and Slovakia). The incumbent operators in some other Member States are still effectively designated under legal provisions still in force for a transitional period from the old regulatory framework. On the other hand, the Commission has taken action against France and Portugal for excluding firms a priori from being designated to provide at least a part of the USO.

While in most Member States, the incumbent operator has been designated as the USO provider (e.g. Greece, France, the Netherlands and Portugal), in Estonia an alternative operator provides the whole USO (albeit with no compensation being envisaged) and in Belgium and the Czech Republic alternative operators provides services for consumers with special needs.

Some countries have defined the USO to cover the provision of a fixed telecommunication service. Others like Belgium or Finland have included mobile, or any other network technology as a service that can be used to meet the USO. For example, in 2007, the Stockholm Administrative court stated that the USO is technology neutral and can be fulfilled by using TeliaSonera's mobile network.

A variety of approaches have been adopted to meet the needs of people with disabilities and special social needs including special tariff schemes, stakeholder advisory panels to consider tailored services and billing or, in Sweden, the procurement of particular services by the regulator (such as sign language translation services using 3G calls).

USO funding across the EU

Generally, Member States do not require compensation to be paid to the operator providing the USO.³¹ In many cases, this is because the universal service has not been deemed an unfair burden. In Austria, an unfair burden is not established if the universal service provider's share of turnover on the market is more than 80 per cent. In the case of Belgium, the funding mechanism is not based on assessing whether the USO creates an unfair burden but rather on the number of tariff discounts granted by a particular operator (this is being examined by the Commission as potentially being an infringement of the Directive).

Four Member States have introduced funding mechanisms for compensation of the net cost (the Czech Republic, France, Italy and Spain). The cost modelling approach differs between each country including in terms of what benefits to take into account or even

³¹ This is perhaps not surprising given the densely populated nature of many Member States, particularly old Member States.

whether to include a rate of return. The costing process has been marked by significant disputes. In the Czech Republic, the regulator was required to review the industry contributions by the Supreme Administrative Court.

The French regulator estimated the net cost of the USO at €33 million in 2004, reflecting a cost of €115 million and benefits of €82 million. This cost is recovered from an industry fund.

In Italy, the net cost of voice telephony is determined by (i) potentially uneconomic areas first being identified on the basis of socio-economic factors (in practice mainly mountainous areas) and then (ii) the long run incremental avoidable costs of efficient provision of the service in those areas being estimated taking into account direct costs (valued using current cost accounting) and subtracting the associated revenues from those areas. The aim is to measure the costs that Telecom Italia would avoid if it were not under the USO. AGCOM estimated that the net cost of providing universal service incurred by the designated undertaking was €37 million in 2002 (this was the latest net cost figure approved by AGCOM). The fund was apportioned to be recovered across the industry (Telecom Italia 35.4%, TIM 31.4%, Vodafone Omnitel 22.8% and Wind 10.4%). The transfer of compensation has also been delayed in Italy.

In Spain, the regulator estimated the net cost at €110 million in 2002 but did not activate any funding mechanism on the grounds that the undertaking was considered not to have suffered any competitive disadvantage. After a successful appeal, the regulator was required to review the impact of competitors on the net cost and is using a new methodology to estimate net costs and whether an unfair burden exists for 2003 and 2004.

Finally, in some Member States, Governments contribute to funding some USO services. In addition, there are proposals in Latvia to fund the USO at least in part from revenues from allocating numbers and spectrum charges.

Reform proposals

The European Commission is required to regularly review the scope of the USO with regard to tests relating to whether a particular service is used by a majority of the population and, if the lack of access to the service by particular customers, would lead to social exclusion. A report on the previous review conducted over 2005 was published in April 2006.³² The Commission found that there was not need to change the scope of the USO at that time particularly noting that (i) access to mobile services is high but competitive mobile markets can be expected to continue to support high access without the need for a special mobile USO; and (ii) only a minority of households have access to broadband and extending the USO scope to cover broadband at that stage would be costly (governments could however support rollout of broadband through direct government funding); the Commission has announced that it will release a green paper proposing longer term reform of the USO at the start of 2008. Matters that are expected to be covered in the paper include (i) whether the USO should be defined with regard to network access rather than with reference to particular services; (ii) the implications of widespread access to mobile services for the USO; (iii) whether the scope of the USO should be extended to broadband; (iv) whether the practice of requiring the incumbent operator to continue to exclusively fund the USO, as occurs in many Member

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http://ec.europa.eu/information_society/policy/ecomms/doc/info_centre/communic_reports/universal_service/com_2006_163_final_en.pdf

States, is still appropriate given developing competition with greater consideration to be given to funding from general taxation and industry funds.

New Zealand

In New Zealand, the telecommunications universal service obligation (TSO) applies to local residential telephone services, directory assistance and relay services for the hearing impaired.³³

The incumbent fixed line operator, Telecom, is the sole provider of the universal residential telephone service. The purpose of the USO is to facilitate the provision of telecommunications services to "groups of end-users within New Zealand to whom those telecommunications services may not otherwise be supplied on a commercial basis or at a price that is considered by the Minister to be affordable to those groups of end-users".³⁴

The New Zealand regulator (the Commerce Commission) calculates the cost of delivering the TSO using a model designed to estimate the 'unavoidable incremental cost' of an efficient network operator providing services to commercially non-viable customers. The model is said to be a scorched node model (but it does include a costing of a wireless access network to serve clusters of customers if this is lower cost than existing technologies and can be integrated with the incumbent network).

Intangible benefits are assessed but do not offset the costs of providing the TSO. The CC has concluded that because few additional customers are likely to be serviced because of the TSO (i.e., most customers would acquire services at a cost based prices), there is unlikely to be additional benefits and revenues from operating as the universal service provider. However, the Commerce Commission does estimate the value of super normal profits earned on DSL and long distance services provided to the customers in TSO areas.

The funding of the TSO net cost is allocated among network owners according to their share of revenue (from both retail and wholesale sales) less amounts payable to other network owners (inter-carrier payments). Non-network owners, including internet service providers, do not contribute to funding the TSO.

For the most recent period (year to June 2006) the Commerce Commission has made a draft determination that the net cost of the TSO is NZ\$78.3 million for serving around 58,000 commercially unprofitable customers in high cost areas.³⁵

United States of America

The Federal Communications Commission (FCC) oversees a universal support scheme under the Telecommunications Act 1996. The Act requires the FCC to promote quality services being delivered at "just, reasonable and affordable prices"; advanced telecommunications services to all regions in the nation with an emphasis on promoting

³³ The TSO also covers telephone books and emergency service provision.

³⁴

<http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/TelecommunicationsServiceObligations/Overview.aspx>

³⁵

http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/TelecommunicationsServiceObligations/ContentFiles/Documents/draft_public_0506.pdf

service delivery in rural and high cost areas at prices that are comparable to metropolitan prices.^{36,37}

A Universal Services Administration Company (USAC) administers the universal service fund (USF) for the delivery of four programs for carriers serving - high cost rural areas, low-income consumers, rural health care providers, and schools and libraries.

To receive high cost support an incumbent local operator (rural or non-rural) or competitive carrier (fixed or mobile) must be designated as an eligible telecommunications carrier (ETC) by the FCC or a state public utilities commission (PUC).³⁸

The main forms of high cost support can be summarized as follows:

'Last mile' support is for small (rural) incumbent operators where the cost to provide services exceeds 115% of the national average cost per line. Last mile support is subject to an annual indexed cap based on the productivity growth in the economy and the growth in rural lines.

'Forward looking' support is for large (non-rural) incumbent operators and competitive operators (fixed and mobile) to keep rural prices equivalent to urban prices. Through various rule makings the FCC has adopted a costing of the USO based on a forward looking efficient long run incremental cost methodology for high cost areas (a hybrid proxy cost model). The model generates the state-wide average cost per line, which is then compared to the national average cost per line to determine eligibility for forward looking support. If the state-wide average cost per line exceeds two standard deviations of the national average cost per line (the national cost benchmark), the state qualifies for forward looking support. Support is provided for all intrastate costs per line that exceed the national benchmark. Only a proportion of line costs from the model are allocated to intrastate costs (76%).³⁹

Competitive carriers, including mobile carriers, that provide universal services receive compensation on the basis of the cost of the incumbent. This has led to a rapid increase in the cost of the high cost program within the USF.

'Interstate access' support is available to incumbent operators who are subject to a price cap (and new entrant carriers competing against price capped incumbents), but who are unable to recover the allowance made for interstate access support in interstate access charges. Since 2006, the FCC has removed the implicit support component interstate access charges and established an explicit interstate access support component for price-cap carriers. Interstate access support is available to carriers serving lines in areas where they are unable to recover their permitted revenues from line charges.

³⁶ There are also specific obligations to provide services to schools, library and rural health care providers.

³⁷ As far back as the Communications Act of 1934, a primary purpose of regulation in the US was the goal of 'universal service'. Though no universal subsidies are provided for in the 1934 Act, it led to the Bell System of franchised monopolies with the purpose of universal service and funding via internal cross subsidies and averaging.

³⁸ The state commissions have primary responsibility for designating carriers. Over 1,700 eligible telecommunications carriers receive support under the high cost program.

³⁹ According to USAC ten states (Alabama, Kentucky, Maine, Mississippi, Montana, Nebraska, South Dakota, Vermont, West Virginia, and Wyoming) are eligible in 2007.

'Interstate common line' support is available to incumbent operators who are subject to rate of return regulation (and new entrant carriers competing against rate of return regulated incumbents) to recover interstate access charges and maintain charges for subscription services at affordable prices.

'Local switching' support is for small (rural) incumbent operators to help carriers recover some of the fixed switching costs of providing services to fewer customers.

The high cost support program has grown from around US\$2.6 billion in 2001 to around US\$4.2 billion in 2006.⁴⁰ In 2006, non-incumbent carriers received around 24% of payments from the program.⁴¹ Small (rural) incumbent operators receive about 70% of payments, leaving around 6% for large (non-rural) incumbent operators.

Low income support is available under the USF.⁴² Eligible persons are those receiving state aid or those on federal aid programs (such as Medicaid or food stamps) or those with incomes less than 135% of the federal poverty level. Low income supported services includes discounts on fixed and mobile services (with only one discount available per household), discounts on connection charges and access to services with long distance calling blocked or controlled (thus avoiding security deposits). In 2006, this fund was worth around US\$820 million.

Rural health care support provides discounts to rural health care providers (and telecommunications and internet service providers providing services to rural health care providers) for telecommunication services and Internet service charges. In 2006, this fund was worth around US\$45 million.

Schools and libraries support provides discounts available to schools and libraries for telecommunication services and internet service charges. In 2006, this fund was worth around US\$2.25 billion.

All telecommunications carriers that provide service internationally and between States contribute to the USF based on their share of revenues derived from end users for telecommunications services (ie, share of retail revenues including subscriber line charges).⁴³

Companies providing services to consumers under the support programs identified above may draw from the fund.

USF reform is frequently on the agenda in the United States, however recent substantial increases in the size (largely attributed to mobile network receiving subsidies in areas where there are multiple networks⁴⁴) has led the Federal State Joint Board on Universal Service to recommend that the FCC take immediate action to contain the growth in high universal service support fund by imposing an interim, emergency cap on the amount paid to competitive carriers, such as mobile networks. If adopted the effect of

⁴⁰ These figures refer to the size of the USF for serving customers in high cost areas.

⁴¹ <http://www.usac.org/about/universal-service/fund-facts-charts/hc-Disbursements-by-Incumbent-v-Competitive-ETC.pdf>

⁴² <http://www.usac.org/li/low-income/>

⁴³ Proposals, including the Universal Service Reform Act of 2007, will see contribution come from more operators including internet service providers.

<http://www.boucher.house.gov/images/stories/Boucher/usf%202007.pdf>

⁴⁴ While support to incumbent carriers has been flat since 2003, in the six years from 2001 through 2006, competitive carriers support grew from \$15 million to almost \$1 billion – an annual growth rate of over 100 percent.

the cap would be to limit payment to the previous year's level, but only for competitive carriers (e.g., mobile operators).⁴⁵ Mobile operators have opposed this as discriminatory.⁴⁶

In terms of longer term reform the Joint Board has put forward various proposals for comment.⁴⁷ These are based on recent hearings, submissions and proposals from parties and include:

The use of reverse auctions to determine the level of high cost universal service support. Mobile operators and the mobile industry association (eg, Verizon and CTIA) supported and presented specific auction proposals for areas where there was the potential for multiple bids. The proposals varied significantly in design, for example one was for a 'winner takes all' outcome, and the other allowed multiple winners/service providers.⁴⁸ The use of a reverse auction for the purpose of the telephony USF has been opposed by the national exchange carriers association (NECA) representing local incumbent telephony companies.⁴⁹ Reverse auctions are opposed by NECA for administrative and design reasons (eg, quality setting) as well as concerns for the inability of carriers subject to rate of return regulation to make up revenue shortfalls if the USF is fixed for extended periods of time. As the carrier of last resort the incumbent operators note that "embedded cost recovery mechanisms are integral to universal service in rural areas". All parties concede that a move to a reverse auction model would involve significant transition arrangements.

Undertaking more 'granular' costing using geographic information system (GIS) technology and the latest network cost modeling to better calculate and target support (proposal were put forward by Embarq, a large (non-rural) incumbent carrier). Disaggregating the allocation of support below the currently defined subsidy area (or wire centre/exchange area) level, to identify and target areas that are uniformly high cost and do not include some low cost areas. Incumbent carriers have opposed disaggregation and instead argued that each fixed operator incumbent or mobile operators should receive support based on their actual costs even if they are different, given the different nature of services provided.

Defining a new approach to calculating support for competitive carriers based on their actual costs (rather than the costs of the incumbent) and perhaps imposing a limit on the number of competitive carriers that can serve a designated high cost area. Perhaps predictably this has been supported by fixed incumbents (though they seek to have a continuation of their funding based on their actual costs)⁵⁰ and opposed by mobile operators because of the complexities in mobile cost modeling but who support a transition to market based solutions such as reverse auctions (albeit guided by cost modeling).⁵¹

Whether universal service funding should be used to promote broadband deployment. This will include considering proposals for a reverse auction for the provision of networks to support broadband services. These have been made by both mobile (eg, Alltel) and

⁴⁵ http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-07-88A1.pdf

⁴⁶ http://files.ctia.org/pdf/filings/070531_Universal_Service_Comments.pdf

⁴⁷ http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-07J-2A1.doc

⁴⁸ It is worth noting that Verizon has few eligible carrier designation for its mobile networks so its program of 'winner takes all' auctions for mobile has been seen as self serving.

http://files.ctia.org/pdf/filings/070702_CTIA_HCUSF_Replies.pdf

⁴⁹ http://www.neca.org/wawatch/wwwpdf/060107_1.pdf

⁵⁰ http://www.neca.org/wawatch/wwwpdf/060107_1.pdf

⁵¹ http://files.ctia.org/pdf/filings/070702_CTIA_HCUSF_Replies.pdf

fixed line operators (eg, Qwest).⁵² The possibility of including a 'broadband' service, however defined, in the universal service has been received with caution by most operators, largely due to the uncertain nature of the service definition, the cost and the uncertainty around funding arrangements. However, the extension of the universal service to broadband has political support. Recent reform proposal would see subsidies for the deployment of networks in rural areas capable of service speeds greater than 1 megabit per second.⁵³

⁵² http://www.neca.org/wawatch/wwwpdf/062807_2.pdf

⁵³

http://www.boucher.house.gov/index.php?option=com_content&task=view&id=1040&Itemid=75

ANNEX C - Industry funds versus general taxation

Economic efficiency

Administration costs

There are compelling reasons in terms of minimising administration costs as to why general taxation is to be preferred to the operation of an industry fund.

In order to raise USO revenue through an industry fund, it is necessary to fund the personnel and other resources required to:

- establish the fund including the definition of the tax base and tax rate structure, consulting on its appropriate design and ensuring that it remains appropriate as an increasingly diverse range of service providers compete with each other;
- give legal effect to that tax base and the associated tax obligations on the provider which may be particularly difficult where, say, VoIP providers are located internationally;
- require providers to develop and maintain systems for complying with that obligation (including collecting the information necessary to estimate that obligation);
- audit the assessments made by the providers; and
- have a mechanism for resolving disputes (enforcing the law) where disputes arise between the taxpayer and the collection agency.

The proportionality of establishing and maintaining an industry fund should also be assessed taking into account that in the estimated level of net costs is relatively low and often much lower than the amounts proposed in the late 1990s when industry funds were first being developed.

By contrast, in order to raise the required USO revenue through general government revenue all that is necessary is to increase the rate of existing taxes (or not reduce them as fast as they otherwise would be reduced). In fact, the size of estimated net costs can be so small relative to the general taxation revenues as to not require any specific change to general taxation rates.

The cost of distortions to consumer decision making

The other economic efficiency cost associated with taxation is the cost of distorting the decisions of citizens and taxpayers.

For goods supplied in a perfectly competitive market, tax reduces economic efficiency, by introducing what economists call "deadweight cost". Economic efficiency is promoted when the price of a particular good reflects the marginal cost to society of supplying that good. When this is the case consumers have an incentive to consume up until the point at which the value they place on consuming that good is equal to the cost to society of producing that good.

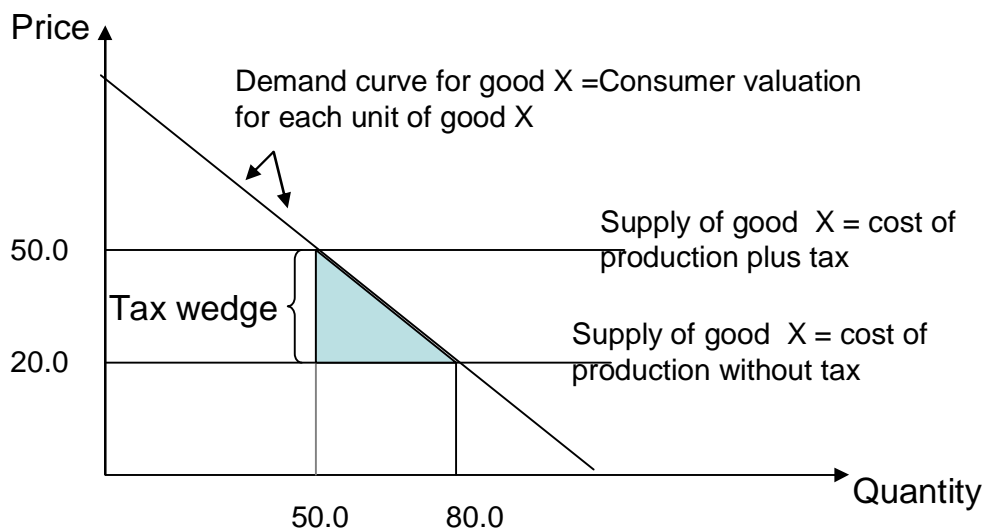
Taxes have the effect of raising the price above marginal cost, i.e., creating a wedge between what it cost to provide and what the consumer has to pay. This distorts consumption by discouraging consumers from buying the good - even though they value it at more than the cost of supplying it to them.

As a consequence, an inefficient level of consumption occurs and citizens gain less from participating in the market. This destroys value, and is known as the 'deadweight cost of taxation'.

In practice, most taxes — including income tax and sales tax — have a significant deadweight cost. However, the deadweight costs of taxation increase exponentially with the rate of tax. This means that it is more efficient to tax a large number of goods lightly than to tax a few goods heavily.

The reason for this can be simply illustrated in the figure below.

Figure 1



This figure shows a linear demand for hypothetical good X (mathematically the above demand curve can be written as Demand = 100 - Price). Absent any tax, the price of good X is equal to \$20 (the production cost of good X) and consumption will be 80 units (the quantity at which demand equals supply). Now imagine that a \$30 unit tax is imposed. Competition will tend to cause this tax cost to be passed through to customers in higher prices. As a consequence, the price for good X will rise to be equal to \$50 and sales will fall from 80 to 50 units. The amount of revenue raised is \$1,500 ($\30×50).

However, this revenue comes at an economic cost associated with the fall in consumption from 80 to 50 units. Each one of those units was previously valued at more than \$20 (the production cost of providing it to consumers). As a consequence, consumers previously enjoyed an economic surplus on that consumption equal to the difference between their valuation and the production cost of providing the service. The value of this surplus is shown diagrammatically as the shaded area in the above diagram.

This means that the cost of the tax to consumers is equal to:

- the tax they actually pay on the 50 units they continue to buy; plus
- the loss of surplus on the 30 units they no longer buy.

The first amount is a pure transfer of value from the consumers to the collection agency (and eventually the final recipient of that revenue). However, the second amount is a pure loss to society. Economists call this the 'deadweight loss' of taxation. As drawn

above, the deadweight loss of this tax is equal to the area of the shaded triangle. This in turn is equal to:

$$\begin{aligned} \text{Deadweight loss} &= \frac{1}{2} * \text{Tax rate} * \text{Discouraged consumption as a result of tax.} \\ &= \frac{1}{2} * 30 * 30 \\ &= \$450 \end{aligned}$$

In this example the cost of raising \$1,500 in revenue is \$450 in deadweight loss (before even considering administration costs). That is, the efficiency cost of the tax is equal to almost a third of tax revenue raised.

In the above example we have used a linear demand curve. This simplifies the estimation of discouraged consumption – which is simply equal to the inverse of the slope of the demand curve multiplied by the tax rate. In this special case the deadweight cost of the tax can be written as:

$$\begin{aligned} \text{Deadweight loss} &= \frac{1}{2} * \text{Tax rate} * \text{Discouraged consumption as a result of tax.} \\ &= \frac{1}{2} \text{Tax rate} * \frac{1}{\text{Slope}} * \text{Tax rate} \\ &= \frac{(\text{Tax rate})^2}{2 * \text{Slope}} \end{aligned}$$

That is, the deadweight loss of the tax increases with the square of the tax rate. For this reason, deadweight loss is minimised if a low tax rate is applied to many goods rather than a high tax rate applied to few goods. This is why the objective of much tax reform is to “broaden the base and lower the rate”.

Another implication of the above formula is that goods where the demand curve has a relatively low slope (high sensitivity to price) should be taxed more heavily than other goods. This principle is known as the Ramsey-Boiteux pricing rule.⁵⁴ However, the difficulties in accurately estimating slopes of demand curves makes implementation of this rule complex.

To illustrate the importance of having a broad tax base, consider the difference between raising \$1,500 from taxing only good X and raising \$1,500 from taxing both good X and good Y (where, for simplicity, good Y has an identical demand curve and supply curve to good X).

In this case, the tax rate need only be \$10.8 per unit to raise the same \$1,500. That is, doubling the tax base reduces the required tax rate by almost two thirds. The reason for this is that when only one good is taxed it must be taxed heavily and this results in high discouraged demand. In turn, this discouraged demand reduces the tax base and requires an even higher tax rate – giving rise to a “vicious cycle”. By broadening the tax base there is less discouraged demand to start with and so less need to raise taxes to compensate.

⁵⁴ Conceptually, the least distortionary tax would be a lump sum tax which is raised without distorting any consumption, labour supply, investment or production decisions. A tax levied at \$100 per person regardless of purchases, income or wealth might approximate such a tax. However, such a tax clearly violates vertical equity objectives (ie, that those on higher income pay greater tax than those on lower income).

The lower tax rate also means that deadweight loss is reduced. The total deadweight loss in this scenario is only \$118 (or nearly one quarter of the deadweight loss in the scenario where only good X is taxed).⁵⁵

The general tax principles illustrated above are critical when considering funding the USO. Funding the USO from an industry levy is equivalent to raising the required revenue by taxing one product (telecommunications) while funding the USO from general taxation more closely approximates the scenario where all goods⁵⁶ are taxed. Thus, we can expect the deadweight cost associated with an industry levy to be an order of magnitude greater than the deadweight loss of funding the USO from more broadly based taxes.

In fact, an industry levy on telecommunications is likely to be particularly inefficient for the following two reasons:

- High fixed costs in telecommunications mean that operators need to set prices above marginal cost in order to be viable (even before any taxes are imposed); and
- Network externalities suggest telecommunications should optimally be taxed less heavily (or even subsidised) than other industries (not more heavily).

Both of the above facts mean that, even without any tax, the cost to society of providing additional units of telecommunications (calls, minutes or subscriptions) to consumers is less than the value to society of providing them. Hence, society would actually benefit by encouraging additional telecommunications consumption - *indeed this is a primary objective of the USO*.

However, taxing telecommunications in order to fund the USO is counterproductive. It actually discourages consumption of precisely the services that efficiency considerations suggest should be encouraged by the USO.

In technical terms, the wedge between consumer valuation and marginal cost is already high even before a tax is imposed. This means that imposing a tax on telecommunications will not just result in a deadweight loss proportional to the square of the tax rate. Rather, the deadweight loss will be proportional to the square of the sum of the tax rate and the pre-existing wedge between price and marginal cost.

Similarly, network externalities mean that even without taxation an inefficiently low level of consumption will occur. Communications occurs, by definition, between two parties and, in general, both parties benefit from that communication. However, generally only one party pays the costs of provision (eg, the calling party on a phone call). If that party makes decisions solely on the basis of their personal costs and benefits then too little communication will result (eg, too few calls will be made). By taxing telecommunications, we make this pre-existing distortion worse.

When account is taken of these factors it is reasonable to believe that the deadweight loss associated with an industry levy on telecommunications will exceed the actual value of tax revenue raised. In fact, Hausman has estimated the deadweight loss of the

⁵⁵ This \$118 can be calculated by inserting a \$10.8 tax rate into the above equation and multiplying by 2.

⁵⁶ Funding the USO from general revenue will tend to be associated with an increase in either a general sales tax (or value added tax) or from income tax. Income tax is a tax on labour which feeds into all goods and services in the economy.

industry levy in the US to actually exceed the amount of revenue raised.⁵⁷ He calculated that in raising US\$2.25 billion, the use of this industry fund would result in additional efficiency losses of at least \$2.36 billion, i.e. for each dollar raised an additional \$1.05 to \$1.25 would be lost to the economy.

By contrast, estimates of the deadweight loss associated with general taxation tend to be around 10% to 30% of the amount of revenue raised.⁵⁸ This alone is a strong basis for preferring general taxation to an industry level fund.

It is worth noting the US levy, on which the Hausman analysis is based, is collected from long distance calls which would be expected to have a higher own-price elasticity than telecommunications services generally. However, given that the Australian levy is collected based on all revenues, including mobile subscription and mobile calling revenues (which have relatively high own-price elasticities ranging from -0.36 to -0.62)⁵⁹, we would not expect the welfare loss to deviate too significantly from Hausman's estimates such that an industry levy would be preferred. Hausman reports a 'consensus' range of elasticities for long-distance calling between -0.65 and -0.75.

The cost of distortions to business decision making

The above discussion has been based on the implicit assumption that all consumption of telecommunications is made by final consumers. If this were true then the USO tax would solely distort decisions by final consumers.

This implicit assumption allows the analysis of the efficiency of the tax system to concentrate on distortion to consumer behaviour and, in doing so, ignore any distortions to producers decisions. That is, while consumers are forced to distort their demand for services, it is implicitly assumed that whatever services they do buy are produced in the most efficient manner possible.

However, if businesses also buy telecommunications services (as is clearly the case) then this underestimates the distortions associated with an industry tax. In addition to distortions to consumer decision making there will also be distortions to the input decisions for businesses.

Narrowly taxing business inputs has even greater costs to economic efficiency than does taxing final consumption. In fact, it is a well accepted 'rule' of good taxation policy that business inputs should not be taxed (unless taxed uniformly such as under a VAT). This is perhaps best illustrated by quoting from the 1996 citation for the Nobel Prize in Economics awarded to James Mirlees and William Vickrey.

⁵⁷ Hausman, J., "Taxation by telecommunications regulation", *NBER Working Paper 6260*, November 1997.

⁵⁸ For instance, see M. Feldstein, "Tax avoidance and the deadweight loss of the Income Tax", *NBER Working Paper No. W5055*, March 1995.

⁵⁹ See for example: Lukasz Grzybowski, 'The Competitiveness of Mobile Telecommunications Industry Across the European Union', Centre for Information and Network Economics, Munich Graduate School of Economics, April 2004 (average for years 1998-2002). Hausman, J., "Cellular Telephone, New Products and the CPI," *Journal of Business and Economic Statistics*, 1999; G. Madden, G. Coble-Neal and B. Dalzell, 'A Dynamic Model of Mobile Telephony Subscription Incorporating a Network Effect', *Telecommunications Policy*, 28, 2004, pp. 133-144; Rodini, M., M. Ward and G. Woroch, "Going mobile: substitutability between fixed and mobile access", *Telecommunications Policy*, 2003; Dotecon estimate as reported in UK Competition Commission, *Calls to mobiles report*, 2003, Table 8.2; Hausman estimate taken as mid-point of range of -0.5 to -0.6 reported in Submission by Vodafone to the New Zealand Commerce Commission – Submissions on weighted revenue approach to calculation of TSO Liable Revenue, 6 October 2003, p.10.

“The general theory of optimal taxation in a second-best economy encompasses few clear cut recommendations. If one condition for social efficiency is violated, as a rule there is reason to violate others as well. However, Diamond and Mirrlees (1971) obtained a highly universal result. Under relatively general conditions, it is desirable to maintain production efficiency. In concrete terms, this means that taxes should not be levied on factors of production.” [Emphasis added.]

Moreover, telecommunications is a vital input to almost every sector of the economy and any tax on the telecommunications sector will tend to distort producer decisions throughout the economy in a particularly pernicious manner. For example, an across the board increase in the cost of telecommunication products will tend to artificially increase the cost to businesses of expanding to diverse locations or from transmitting information to workers or customers not physically present at a location.

By taxing the free flow of information in the economy a telecommunications industry levy is likely to impose considerable efficiency costs above and beyond those relating to the final consumption decisions of consumers.

Vertical equity

The progressivity of a tax system defines the rate at which tax obligations increase as citizens' income or wealth increases. Vertical equity objectives are achieved when the progressivity of the tax system reflects citizens' ability to pay while being balanced by retaining some reward for their efforts and skills. The level of progressivity in any country's tax system is ultimately shaped at the ballot box.

Industry funds cannot hope to achieve vertical equity because all consumers pay the tax equally per unit of consumption. For example, an industry levy on calls will mean that a poor citizen will pay as much per call as a wealthy citizen. Similarly, a carer of dependent children or dependent parents will pay as much as another citizen who does not have any dependents. The general tax system can and does make these distinctions between citizens when raising revenue. However, an industry levy cannot.

Horizontal equity

Horizontal equity requires that differences in tax paid by citizens reflect some underlying difference in their ability to pay or some other criteria that would justify differential taxation.

However, an industry levy on telecommunications would collect more tax from citizens that use telecommunications more. It is difficult to see that there is any equity justification for this differential taxation. That is, it is difficult to see why citizens who use telecommunications more heavily, say because they live further from their family or in remote areas, should pay more than others who use telecommunications less intensively.

Competitive neutrality

It is difficult to comment on competitive neutrality without a specific structure of an industry fund in mind. However, we do note that industry funds are often imperfectly designed and lead to competitive distortions or distortions of business structure decisions. For example, imagine a levy per customer. This would tend to favour businesses and business models with fewer higher value customers. Alternatively, consider an industry fund that taxes total retail sales less payments to other operators. This would tend to

favour businesses and business models that rely on the use of other businesses' infrastructure (i.e., would encourage retail rather than wholesale business models).

In fact, it is difficult to conceive of any industry fund that would be both practical to implement but would not create some competitive distortions. This is especially the case given the rapid rate of technological changes and market changes in the industry - as services and networks converge, more diverse companies (such as VoIP providers) enter the sector and vertical linkages become more rather than less complex.

Transparency

Finally, we note that general taxation is also more transparent and would link political decisions concerning the scope of the USO to the political responsibility for funding that decision.

Conclusion

Well-established taxation theory finds that the welfare loss of raising a given amount of revenue is substantially reduced by collecting that revenue over as wide a base as possible. The deadweight cost of general taxation is generally estimated to be in the range of 10% to 30% of the amount collected, while an empirical estimate of the deadweight cost of industry levies suggest that they may be three times or more as costly. The relatively small size of USO net costs estimated also suggests that general taxation is to be preferred to incurring the administrative costs of establishing and maintaining an industry levy. Funding the USO through general taxation can also be expected to be more equitable, competitively neutral, and politically transparent than an industry fund.



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