5

Access to telecommunications - access to opportunity

5.1 To date, the high capital costs associated with rolling out telecommunications services to regional Australia have generally deterred investment in infrastructure beyond that required to fulfil the Universal Service Obligation (USO) (see Box 5.1). The USO is the telecommunications 'safety net' for basic telephony and advanced telecommunications (that is, access to a particular level of bandwidth).

5.2 As of May 1999, the telecommunications sector is the fastest growing sector in Australia, generating $21.7 billion in revenue and employing 122 000 people.[1] Yet, there has been limited or no competition for the provision of services requiring considerable initial investment in regional Australia, with carriers and service providers choosing to concentrate on more profitable and less risky urban markets.

5.3 The higher cost and inadequate provision of services are due to the lack of competition, rather than the capacity of networks. A preliminary finding of the National Bandwidth Inquiry is that the regional backbone network is of high quality and capacity and could provide bandwidth in excess of most demand scenarios, even to small rural towns.[2] Other platforms, such as wireless local loop (WLL) technology, are available and in use in a number of countries. However, the infrastructure is not yet in place in regional Australia to make use of the technology.

> High costs and spectrum scarcity has always been a problem. Many of the communications systems and services (electronic

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1 R Simpson, *Brave New Regions*, paper given at the Regional Australia Summit, October 1999, p. 2.

2 The National Bandwidth Inquiry is examining availability and pricing and issues relating to the current and future capabilities of the Australian telecommunications network to deliver adequate infrastructure support for a full information economy.

> mail, interactive television, audiographic and radio communications etc) are already in place, but the infrastructure to support them is not. This is particularly the case in Western Australia and other states where many outback homesteads do not even have access to a basic telephone service.[3]

Box 5.1 The Universal Service Obligation (USO)

Following deregulation of the telecommunications industry, a Universal Service Obligation (USO) was designated requiring the telecommunications industry to ensure that 'standard telephone services are reasonably accessible to all people in Australia on an equitable basis, wherever they reside or carry on business'. The strengthened *Telecommunications (Consumer Protection and Service Standards) Act 1999* includes an additional USO requirement for a separate 'digital data service', to be provided as either a 64 kilobits per second (kbps)/ISDN (integrated service digital network) equivalent service (to be made available to at least 96 per cent of the population), or a comparable 64 kbps data delivery service (for the four per cent of the population unable to receive an ISDN service).

Appendix E contains more details on the USO.

5.4 Despite the licensing of three major carriers, five mobile phone carriers and around 700 internet service providers (ISPs) since deregulation, the committee is concerned with this lack of investment in telecommunications infrastructure beyond the major cities.

5.5 While telephony is becoming increasingly 'high tech', services are also now cheaper to provide due to the greater capacity and the use of more reliable, easily replaceable components (optical fibre, cards) requiring less servicing. Yet rural and regional customers still appear to be subsidising metropolitan customers through the long distance network and higher access costs. Many submissions refer to this situation.

> The cost of access, particularly of bulk or broad band services is currently held at a high cost, because the intrastate infrastructure is still predominantly controlled by Telstra.[4]

And:

> A small number of resellers have commenced retailing telephony services, mostly to business users. There has been very minor

3 Curtin University of Technology, Submission no. 78, p. 2.

4 Eyre Regional Development Board, Submission no. 185, p. 4.

> investment in infrastructure such as exchanges to support this activity.[5]

Telephony

5.6 A distinction needs to be made between the network (usually optical fibre carrying digital data across many channels) and the customer access network (CAN). The nature of the CAN and the distance from a telephone exchange determines the line speed and bandwidth able to be provided to the customer. In general, access links to the network rather than networks themselves are the limiting factor. This has implications for the 'last mile problem'.

5.7 A range of transmission systems to regional Australia presently exists including 'single channel and small capacity multi-circuit radio systems, Analogue Radio Concentrator Systems (ARCS), Digital Radio Concentrator Systems (DRCS), High Capacity Digital Radio Concentrator Systems (HCRC), Satellite and cable.' Major population centres have telephone exchanges and are usually serviced with copper cable access links to fibre-optic based networks. Most of this infrastructure is owned by Telstra and the committee understands that Telstra's Future Mode of Operation (FMO) project to upgrade the network by replacing all analogue switching equipment with digital switches has been completed.[6]

5.8 Much of the copper wire installed for voice traffic is inadequate for contemporary needs including for teleworking and access to Internet services.

> The CAN links each exchange to the customers in its catchment area. In the majority of Queensland's rural and remote areas the CAN consists of old copper wire and exhibits increasing failure rates. The deteriorating quality of this network produces slow and therefore more expensive access to the Internet and hampers availability of other digital services in regional, rural and remote areas. Upgrading the CAN is essential to achieve consistency in service availability across metropolitan, regional, and rural and remote areas.[7]

5.9 People living further away from towns are generally serviced with ARCS or DRCS technology, infrastructure that in many cases is aging and in

5 Tasmanian Government, Submission no. 284, p. 8.

6 Telstra, Submission no. 287, pp. 6-7.

7 Queensland Government, Submission no. 257, p. 15.

need of replacement. About 17 per cent of subscribers across Australia rely on DRCS, a technology designed to carry voice traffic that is capable of only about 9200 bits per second (bps) and, for data, may reach only 7200 bps, prohibiting use of modems and therefore access to data and the internet.

> The towers that serve as local transceiver sites for the local DRCS, and permit communications with station properties up to a 60 kilometre radius provide a single telephone connection but have been found to suffer in terms of;
>
> - unreliability due to propagation irregularities arising from the terrain, long path length, and poor fade margin,
> - congestion due to blocking of the local switch limiting the number of simultaneous calls through a repeater,
> - limited bandwidth due to use of coding algorithms which work with voice but which reduce data transmission for Internet traffic to less than 9600 bits / s (currently being upgraded to 28,800 bit / s).[8]

Service levels

5.10 The committee was advised of long delays in service in rural areas.

> It is essential that the Universal (customer) Service Guarantee infrastructure is continued to protect rural and remote consumers, regardless of the carrier or future carriers, so as to ensure service and maintenance of fault rectification time lines and installations of the telephone networks is kept to a minimum in these areas.[9]

And:

> Poor service levels result in the mobile network being worthless in many areas of the Loddon Shire. The introduction of the digital system is exacerbating the problem.[10]

5.11 Telstra cites its Rural and Remote traineeship program enabling more young Australians to live and work in their home communities as evidence of its commitment to improved service levels in the bush. It also states that investment per customer in areas outside capital cities is nearly 50 per cent more than for metropolitan customers.[11]

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8 The South West Strategy Group, Submission no. 76, p. 3.

9 Isolated Children's Parent's Association of Australia (Inc.), Submission no. 94, p. 5.

10 Loddon Shire Council, Submission no. 43, p. 2.

11 Telstra, Submission no. 287, pp. 2, 5.

5.12 The Customer Service Guarantee (CSG) establishes standards of service for standard telephone services (not mobiles), including timeframes for service connection, fault repair and attendance at appointments. Quarterly monitoring of the CSG by the ACA showed that, in 1998, in major rural areas, Telstra's performance was consistently and markedly lower in areas where infrastructure was not available at the site. In terms of fault rectification, performance ranged from 78 to 84 per cent for attention within two full working days after notification of a fault.[12]

5.13 The submission from the NFF urges upgrading of standards, not mere maintenance of the status quo.

> Telecommunications services provided as part of the universal service regime, by any carrier who may wish to become a national or regional universal service provider, should be subject to the same minimum quality standards and that the same standards apply for all Australians, irrespective of where they reside or carry on business.
>
> All CSG regulation and legislative changes must reflect a commitment to an upgrade in quality standards of existing services, not merely a maintenance of the status quo.
>
> The current CSG should be altered to reflect:
>
> - The same quality of service and timeframes for all Australians, with the only addition being the specified supply time required for staff travel and other resources;
> - That the current CSG definitions of metropolitan, rural and remote are redundant;
> - There is no rationale for a relationship to be drawn between the Telecommunications quality of service and charging zones;
> - The size of the community where you choose to reside or carry on business has no relationship to the time it should take for connection of a service;
> - There must be an independent audit of the adherence to the CSG standards by carriers; and
> - Competition in provision and restoration of telecommunications services should be fostered.[13]

5.14 The committee understands that the government is considering tightening of standards, in particular, (i) to safeguard small business, and (ii) to

12 Australian Communications Authority, Submission no. 124, p. 7.

13 National Farmers Federation, Submission no. 238, p. 3.

simplify and tighten standards for service connection, 'so that, for example, remote customers living in an area where a telecommunications network already operates should not wait more than 3 weeks for a connection.'[14]

Recommendation 19

5.15 **The committee recommends that the Commonwealth government require telephone carriers to meet levels of service established under the Customer Service Guarantee for all customers, regardless of location.**

Band width

5.16 Historically, *bandwidth* referred to the amount of radio spectrum available or necessary for carrying a signal for a particular purpose. Bandwidth has been used more generally to refer to the measure of throughput capacity of a given communications network. In relation to digital transmission of data, the amount of bandwidth between sender and recipient determines how much data can be transmitted per unit of time. It is measured in bits, kilobits or megabits per second (bps). A typical residential modem for example, may transmit in the range of 28.8 kbps through to 56 kbps.[15]

5.17 The need for access to higher bandwidth services for internet, e-mail and other data applications was a feature of many submissions and information provided to the committee during visits to regional Australia. **There is no doubt that regional users are at a major disadvantage, compared with urban customers, in terms of the data rate capability available through the public telephone network.**

5.18 Central Western Regional Development Board advised the committee during its visit to Parkes that inadequate bandwidth meant that fax and voice communication were either impossible or very difficult, especially in the western parts of the region. This situation is replicated in many parts of regional Australia, severely impacting on business competitiveness.

> North Queensland's access to internet communication is limited to 2 megabytes per second which is significantly lower than Brisbane which has access to 155 megabytes per second. In terms of

14 Australian Communications Authority, Submission no. 124, p. 7.

15 Discussion Paper: The National Bandwidth Inquiry, Chapter 1, Department of Telecommunications, Information Technology and the Arts, September 1999.

> regional economic development, without an improvement in telecommunications access, the ability to do business in globally competitive markets is severely hampered.[16]

5.19 The Northern Territory government argues for more bandwidth not just on equity grounds, but also in terms of opportunities that could be grasped.

> Access to wide band technology can overcome the challenges of distance, allowing small communities to develop business opportunities, increase economic viability and alter the social implications of isolation. The sale of Aboriginal art on the Internet has removed the middle person and commissions, increased local incomes, developed self sufficiency, increased employment and thereby improved self esteem among communities. It is demonstrable that wide band infrastructure can minimise threats to people in remote areas and enable them to maximise opportunities.
>
> It is argued that 100% coverage of telecommunications services is required on an equally affordable basis, at a local call cost, to achieve a reasonable quality of life and address issues of equity in regional and remote areas. It argues that the provision of 128 Kilobits per second (Kbps) capacity should be the minimum standard to ensure adequate service levels to remote and regional areas.[17]

The Customer Access Network

5.20 The committee was advised that Telstra plans to spend $730 million on enhancing, upgrading and rehabilitating the CAN in the next financial year, including:

- improving capability to provide for future data working;
- providing capacity in areas where demand for growth is greatest; and
- building capability to provide access to convergent technologies.[18]

5.21 The revised USO requires the service provider to make an ISDN available to 96 per cent of the population. ISDN is an access link technology that consists of a number of facilities depending on the way you dial up and communicate with the exchange. Distance limitations associated with the provision of higher speed data services over copper cables from an

16 Townsville City Council, Submission no. 176, p. 3.

17 Northern Territory Government, Submission no. 232, p. 6.

18 Telstra, Submission no. 287, p. 7.

existing exchange restrict the availability of ISDN to about 5-6 kms from an exchange. In addition, ISDN incurs timed call charges.

5.22 The committee considers it unlikely that Telstra will provide areas not presently served by copper cables with optic fibre or wireless connections because of the associated cost.

5.23 Increasingly, Telstra expects to use satellite delivery for data transmission:

> Satellite technologies are presently undergoing significant improvements both in terms of functionality and technology cost, and over the next two to three years could very well offer cost effective solutions for the alternative delivery of high speed data, facsimile and Internet services. Telstra is at present introducing new satellite delivery platforms which will be used to complement and supplement existing radio based infrastructure.[19]

5.24 According to the Southern Province Projects Group, Telstra's proposed solution for meeting the new USO, that is, land line out using the public switch telephone network (PSTN) and satellite delivery return, has major disadvantages for regional Australia as follows:

- web browsing will not be possible where land lines are less than 14 kbps;
- people in regional Western Australia will be unable to send large documents or large amounts of data quickly, thus restricting their competitive capacity; and
- ISDN costs bear no relationship to carrier costs and constitute:

  ⇒ a disincentive to regional business participation in electronic commerce (e-commerce) and the global economy; and

  ⇒ a disincentive to ISPs setting up in regional areas since they are major users of ISDN, thereby resulting in lack of access and / or choice in ISPs in regional areas and higher costs due to ISDN charging rates.

5.25 Other submissions were also sceptical about upgrading of the CAN and the FMO project:

> The proposed Telstra Future Mode of Operation does not seem to offer the solution the people in the bush are really looking for. The proposed solution of using satellite downlinks for inbound traffic and using the current PSTN for outgoing traffic should be of concern to all Australians as it has the potential to leave people

19 Telstra, Submission no. 287, p. 7.

> living in rural and remote areas further behind their city counterparts.
>
> … Telstra, being the current Universal Service Provider, has invested millions of dollars in establishing a network of towers to provide people living in rural areas with telecommunications. In many cases people are using Digital Radio Concentrator Systems (DRCS). These systems are currently being replaced by HCRC systems over the next few years. Even with this upgrade, data traffic will be restricted to 19.6Kbs which is still too slow for many Internet type applications.[20]

Distance, cost and access

5.26 Several submissions argued that timed call charges no longer reflect carrier costs. The New South Wales government includes 'the removal of any policies in relation to the size of local call zones which result in a cost disadvantage to people living in regional areas' among necessary infrastructure requirements and highlights the cost to the state of subsidising STD rates to schools.

> Existing access deficiencies and cost disadvantages experienced by regional NSW need to be addressed by requiring providers to supply sufficient cabling and other physical infrastructure to regional communities, and ensuring the use of spare capacity of existing infrastructure ...
>
> A major issue for the Department of Education and Training is funding the high cost of telecommunications in rural and remote areas. It has been necessary for the Department to subsidise the STD charges associated with Internet access for schools in remote and rural NSW.[21]

5.27 The committee understands that, relative to the cost of switching and billing, the cost of distance is trivial. Telstra is working towards achieving local call access for data delivery Australia wide by early 2000 but the same situation for voice telephony was not presently envisaged. As Telstra told the committee:

> That is not part of our current business models and the way we do our pricing models. There are a lot of reasons, historical and also network reasons, why that sort of model we use has been

20 Rural Technologies of Australia Pty Ltd, Submission no. 163, p. 4.

21 New South Wales Government, Submission no. 260, p. 11.

> developed. Whether that changes over time, I would not be able to say.[22]

5.28 The predominant access to the internet in regional Australia is through a landline to an ISP. ISPs are major users of ISDN and the chief constraint on internet access for most of regional Australia is not the network, but the access links. As Telstra states:

> ISPs offer a variance of levels of connectivity … there are usually different rates involved and that is the ISPs' choice but the interconnectivity end to end if they have ISDN, both the ISP and the customer, is in the region of 64 kilobits and can be aggregated upwards.[23]

5.29 The committee is aware that, even in areas with local call access to the internet, ISP costs are often higher. This is due to a lack of ISP points of presence requiring rent of long distance ISDN or frame relay links from wholesale ISPs to carry data to a connection gateway. In addition, low data speeds mean that rural and regional customers need longer connection times, further increasing costs.

> As well as poor quality telecommunications infrastructure in regional areas, people also pay a premium for access to high bandwidth services. Exorbitant distance based prices for high B/W telecommunications services severely impede the development of Info Tech related businesses and services.[24]

And:

> Once installed, high access charges can also act as a deterrent to the use of telecommunications services, both to the consumer and the service provider. Charges for long distance calls have been a major constraint for the use and expansion of communications in country areas.[25]

5.30 Speed of access to ISPs varies according the quality of the line, distance from the exchange and the ISP's equipment, ranging from, on average, 7.2 kbps to 44 kbps, for 56 kbps modems.[26]

5.31 A benefit of community networks such as GrowZone OnLine (described in chapter 6) is that ISPs in the GrowZone region can buy wholesale internet

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22 Telstra, Transcript of Evidence, Canberra, 27 September 1999, p. 207.

23 Telstra, Transcript of Evidence, Canberra, 27 September 1999, p. 206.

24 South East Economic Development Board, Submission no. 95, p. 2.

25 Curtin University of Technology, Submission no.78, p. 3.

26 R Simpson, *Brave New Regions*, paper given at the Regional Australia Summit, October 1999, p. 2.

access from that network at much reduced rates with no conditions on download volume or resale price.

5.32 Regional universities have a particular requirement for high bandwidth to accommodate the volume of material required for online learning and research activities. Several universities advised the committee that access to the Australian Academic and Research Network (AARNet) was vital to achieving their teaching and research aims. Some universities are at a particular disadvantage because of distance from the AARNet network, yet the cost of building alternative communications infrastructure is prohibitive.

> Australian Universities pioneered the introduction of the Internet to Australia with the development of the Australian Academic and Research Network (AARNet). AARNet in its current form connects a single node or hub in each State at very high speed (currently 155Mbps [megabits per second]). In Queensland this hub is physically sited at the University of Queensland (St Lucia). Because of their physical proximity to the AARNet hub at UQ, universities in the SE-corner of Queensland can connect to the Internet at high speed (34Mbps) by use of microwave base communications at modest capital and maintenance costs.
>
> JCU and Central Queensland University [CQU] have much poorer access to the Internet. JCU's major campuses at Townsville and Cairns are approximately 1450 and 1850 km from the Qld AARNet hub in Brisbane and thus have no direct access to the hub. Instead both JCU and CQU's communications are currently supported by a shared, inadequate and saturated 2Mbps frame-relay connection leased from TELSTRA.[27]

5.33 The committee was advised of Telstra's commitment to local call access to the internet:

> … We are working towards having that sort of ubiquitous untimed local call for data access. We are working towards the end of this year, I think it is a little later than that now because of some technology issues.[28]

5.34 The committee agrees that distance should not be a component of the cost of telephone charges. It considers that reduced charges for internet access are now possible as a result of advances in technology and does not agree with timed call charges. At the Public Forum on Regional Communications Issues held by the Department of Communications,

27 James Cook University, Submission no. 96, p. 2.

28 Telstra, Transcript of Evidence, Canberra, 27 September 1999, p. 208.

Information Technology and the Arts in November 1999 it was suggested that ISDN was dead for advanced telecommunications services, principally because of its distance dependent high cost.

Recommendation 20

5.35 **The committee recommends that the Commonwealth government require telephone carriers to develop pricing, technical standards and levels of support for telecommunications services that are independent of distance.**

5.36 As part of the $1 billion *Accessing the Future* package of Social Bonus programs to be funded from the second sale of Telstra shares, the government is investigating:

- untimed local calls in extended zones; and
- internet access.[29]

5.37 It understands that these initiatives are linked and that commercial imperatives are also a factor. As the Department of Communications, Information Technology and the Arts told the committee,

> … the government's commitments will be met , but there has been a development in a series of technological avenues in delivering the service and what we are looking at now is to ensure that it is done in the most efficient way possible. What we do not want to do is, if you like, have governments spending money where there are people out there who would provide the service anyhow.[30]

5.38 The committee was advised of initiatives by Telstra regarding this matter and supports provision of untimed local calls to outer extended zones in remote Australia.

> We are also conscious of the government's commitment, before the last election I think it was, for extended zones and for pastoral rates and community call-up to actually improve the lot of those customers that live in that area. We are actually working very actively right now with the department and others [on costing].[31]

29 Department of Communications, Information Technology and the Arts, Submission no. 240, p. 6.

30 Department of Communications, Information Technology and the Arts, Transcript of Evidence, Canberra, 27 September 1999, p. 167-168.

31 Telstra, Transcript of Evidence, Canberra, 27 September 1999, p. 208.

Matching telecommunications solutions with need

5.39 The committee considers that an efficient, reliable standard telephone service with basic data access that can expand as needed should be made available as a matter of urgency to rural and regional Australia. The evidence received by the committee showed that, despite Telstra's assurances on delivering its USO commitment, a number of regional areas were still lacking the services they needed.

5.40 During its visit to Tasmania, the committee learned of Burnie City Council's initiative and leadership in seeking out competitive solutions for communications infrastructure in the region due to the limited nature and cost of services being offered by Telstra.

5.41 Paradox Digital, a national telecommunications company based in Perth, has installed communications infrastructure that will deliver data by satellite at 8 mbps to Burnie's new regional small business incubator, community online access centre, and the region's wide area network. Attraction of a national e-commerce business centre, Canberra-based Intec Australia, as an anchor tenant for the small business incubator was strongly related to the efficiency and cost-effectiveness of the new communications infrastructure. Both the integrated communications network, which covers all community sectors, and the wide area network now enjoy local call access within the network.

5.42 The committee understands that a number of Telstra's competitors are preparing to commence operations in regional Australia.[32] The committee is concerned, however, that communities are often unaware of their real needs and the potential costs involved. Metropolitan Australians have had the opportunity to migrate from relatively low speeds of, say 14.4 kbps to 28.8 kbps and then to higher speeds, according to need and acceptable cost. **Many people in regional areas, however, appear to have expectations of access to high bandwidth for the purpose of, say, video-conferencing, without an understanding that this may require advanced technology such as satellites, with high capital and running costs.**

5.43 The committee understands that alternative technologies, such as WLLs and microwave broadband networks, offer a cheaper solution to regional Australia's standard voice telephony requirements and internet data needs, in particular, to solve 'the last mile' problem. The potential of these networks is set out by the ACA.

> The term 'local loop' has traditionally been used in telecommunications in reference to the final connection between a

32 Public Forum on Regional Communications Issues held by the Department of Communications, Information Technology and the Arts in November 1999.

> customer and the lowest order telecommunication network node of the service provider (eg. the copper cable from the customers premises back to the local telephone exchange). In recent years, the term wireless local loop (WLL) has emerged, signifying that the local loop connection is provided by radio (wireless) means.
>
> Demand is emerging (in Australia and overseas) for FRA [fixed (point-to-multipoint) radio] systems, to connect telephone subscribers in a fast and cost-effective way to new digital networks, whether to serve completely new areas, or to add capacity to over-stretched wireline networks.
>
> Telecommunication service providers—particularly new and prospective providers—view FRA WLL loop technology as an attractive option for a number of reasons:
>
> - the ability to have a fast roll-out for new networks, with a relatively short period between network construction and offering services;
> - the expense of copper or fibre based wireline access for residential use—with WLL there is no need to dig up streets or to put up unsightly aerial cabling; and
> - the flexibility of this technology—which provides options for limited customer mobility (cordless handset) up to full roaming through the use of multimode handsets.[33]

5.44 Stewart Fist, a journalist and writer specialising in telecommunications, claimed that small local loops are the most efficient telephone systems. He argued that continued use of the existing terrestrial network coupled with microwave broadband technology or WLLs (for distances up to about 50 kms from an exchange), provides a potential solution for large parts of regional Australia. His view was supported by other submissions. As Rural Technologies Pty Ltd stated:

> Through the utilisation of current terrestrial infrastructure and modern broadband microwave solutions there is the potential for all Australians, regardless of location, to have access to quality voice and high speed data telecommunications.
>
> At present most property owners are poorly serviced by digital radio systems such as DRCS or HCRC supplied by Telstra. These systems are often unreliable and are not suitable as a platform to deliver high speed access to the Internet. … modern broadband

33 Australian Communications Authority, Submission no. 240, pp. 15-16.

> microwave radio solutions using terrestrial infrastructure is the potential solution.[34]

5.45 Burnie City Council outlined a practical illustration of this technology. Alternatives to Telstra's frame relay network from Burnie to Melbourne were sought, taking account of quality and price. New digital broadband microwave link technology, developed in Australia, appeared to be the most efficient and cost-effective option to provide mainland local call access to Melbourne's 039 area for the region's integrated telecommunications network. The Committee was advised that the model (and associated satellite data delivery and local call access) could be applied to the whole of Tasmania to establish the first national integrated statewide communications network, as well as to other communities and states. However, implementation of the new technology was dependent on government assistance through the Regional Telecommunications Infrastructure Fund (RTIF) Board.

Recommendation 21

5.46 **The committee recommends that the Commonwealth government fund alternative communications solutions for rural and regional Australia through the Regional Telecommunications Infrastructure Fund program. Digital broadband microwave link technology is an example of an alternative technology that could be considered.**

5.47 Stewart Fist also argued for choice of access technologies by local communities, and the ability for access links from the exchange to customers to be owned by local companies rather than a single carrier or service provider. He suggested that cooperative networks could be formed in regional areas and that these should be able to register as facilities carriers. Th New South Wales government supported this.

> [there should be] encouragement by government of better local and regional coordination of IT and telecommunications infrastructure, and consideration of ways to facilitate increased locally based ownership, control and maintenance responsibility for communications links within regional areas.[35]

5.48 The committee also met with FUND-ED FOUNDATION Limited, a charitable foundation with membership drawn from national peak school

34 Rural Technologies of Australia Pty Ltd, Submission no. 163, pp. 4-6.

35 New South Wales Government, Submission no. 260, p. 11.

parent bodies. FUND-ED aims to construct alternative telecommunications infrastructure that will provide affordable, efficient, equitable internet access to all Australian families, regardless of geographical or social circumstances. It has secured support from equipment suppliers and business and requires project financing from government.

5.49 The committee urges government support for alternative carriers, including independent bodies such as FUND-ED.

5.50 The ACA submission pointed out that significant technological developments in service delivery mechanisms relating to each of fixed wire services, terrestrial wireless services and satellite based services could improve the overall availability of data services. The committee is aware that some carriers are planning to introduce these services and that, as part of the rehabilitation of the CAN, Telstra has commenced replacing the DRCS systems with HCRC systems.

5.51 Whether the market will deliver outcomes to address the demand for data service provision remains to be seen. The committee considers that there must be greater effort to promote competition in delivering telecommunications services to regional Australia through an appropriate combination of regulatory action and targeted funding. It considers that there should be more flexibility in the range of solutions available to communities and regions, so that the most efficient and affordable solutions can be implemented. It supports government initiatives to stimulate internet service delivery to regional Australia, in particular, regionally based delivery.

5.52 The committee also considers that regions and communities must be more proactive in demonstrating demand and a market of users, to attract regional telecommunications investment. The 1996-1998 *Farmwide* project run by the NFF that connected 1 000 farmers to the internet across Australia provided clear evidence that high levels of demand exist in regional Australia.[36] Mark Needham of the NFF challenged carriers and service providers attending the November 1999 Public Forum on Regional Communications Issues to accept the commercial risks in providing infrastructure to regional Australia. He referred to a high level of suppressed demand and suggested that provision of basic services would stimulate greater demand not only for basic services but also for a range of enhanced services.

36 R Simpson, *Brave New Regions*, paper given at the Regional Australia Summit, October 1999, p. 3-4.

Mobile Telephony

5.53 Mobile telephony outside of large regional centres is presently unreliable, inadequate, patchy or non-existent. This was a dominant feature of many submissions and information provided to the committee during regional visits. Provision of mobile telephony in regions is an economic issue - major regional industries are not supported either in situ or, during transportation of produce, reducing the competitiveness of regional business. Tourism, a growth area in many regions, is also impacted.

5.54 Mobile telephony is regarded as the technology of the future. Significant technological advances providing voice and high speed data applications through a single device are not far off.

5.55 The limited rollout of terrestrial mobile telephony by Optus is due to the lack of incentives to build remote mobile stations, isolated from other 'sister stations', in areas that would not return a profit.

5.56 Major gaps in mobile telephony continue to exist in regional Australia. Regional Australians consider carrier roaming to be highly desirable and the committee was advised during its visits to regional areas of the suitability of many regions for carrier roaming, particularly those with flat terrain, for example, in and around Parkes.

5.57 Following a public inquiry into whether services enabling domestic intercarrier roaming should be declared, the Australian Competition and Consumer Commission (ACCC) decided against declaration and concluded that the market would be likely to deliver carrier roaming. A decision by the ACCC to 'declare a service' would mean that a carrier or carriage service provider supplying the service (an access provider) must supply the service to any requesting service provider. The ACCC was concerned to avoid impacting investment decisions and about other regulatory risks associated with declaration. It considered that the existence of three initial competitors (Telstra, Optus, Vodafone), when coupled with monitoring and the threat of intervention in the event of unsatisfactory progress concerning roaming agreements, would be enough incentive to existing carriers to offer roaming without the need for intervention.

> Determining terms and conditions, particularly price, may risk deterring future investment and innovation. Accordingly, declaration is likely to be desirable in circumstances of clear market failure and where the potential benefits are sufficient to outweigh any regulatory risks to end-user. … Assuming there is entry [that is, new entrants] in the 800 MHz or 1800 MHz bands after the spectrum auction, the Commission considers that

> roaming is likely to be commercially provided without the need for regulatory intervention….
>
> The Commission has decided that it will monitor the market and be likely to intervene if the incumbents refuse to provide roaming services. If the incumbent mobile carriers act competitively they are likely to provide roaming to entrants. Alternatively, if the incumbent carriers fail to provide roaming on reasonable terms and conditions and in a timely manner, the Commission may view this as an indication of anti-competitive conduct in regard to which the Commission would be likely to take early action under Part XIB of the TPA and/or review the declaration decision.[37]

5.58 The committee considers that the concerns of regional Australians have been overlooked by the ACCC and that carrier roaming should be required.

Recommendation 22

5.59 **The committee recommends that the Commonwealth government monitor the competitive provision of mobile telephony to regional Australia, and, if market stimulation of carrier roaming is not evident by August 2000, it should require roaming agreements between all carriers.**

5.60 Closure of the analogue mobile phone system (AMPS) network and gradual replacement with digital technology (code division multiple access or CDMA) were discussed in many submissions. The committee was advised that:

> In the mobile services market, Telstra currently operates an analogue (AMPS) and digital (GSM) mobile network, while Optus and Vodafone both operate digital (GSM) networks. Digital (GSM and CDMA) technology offers better voice quality, greater security including no cross-talk, enhanced features such as automatic and wide scaled international roaming, short message service, longer battery life, digital data and fax transmissions.[38]

37 Australian Communications Authority, Public Inquiry into Declaration of Domestic Intercarrier Roaming under Part XIC of the Trade Practices Act 1974, Executive Summary, pp. iii-vi.

38 Department of Communications, Information Technology and the Arts, Submission no. 240, p 4.

5.61 The committee met with Telstra who advised that, when fully rolled out, CDMA services would be available simultaneously to metropolitan and non-metropolitan users alike, at the same price and at the same service levels for all customers.

> Telstra is investing over A$400M to introduce CDMA (Code Division Multiple Access) across Australia. Further investment will be made to expand capacity and introduce new services consistent with network growth. The rollout of the CDMA network will provide a service that meets the requirements of our regional and rural customers and will minimise the impact of the analogue closure.
>
> CDMA coverage in regional and rural Australia would extend into many areas beyond where the analogue network was already present. CDMA mobile phone network will be extended to include country locations that are currently covered by Telstra's GSM network, but do not have analogue coverage.[39]

5.62 Other carriers also plan to roll out CDMA networks to regional Australia including Hutchison and AAPT. Because both the American (CDMA) and European global systems for mobile communication (GSM) platforms will be operating in Australia, the ACA considers that Australia 'will be very well placed to adopt further technology enhancements in the CDMA and GSM standards'.[40]

5.63 Concerns remain in regional Australia about the adequacy of CDMA coverage. As the Queensland Government stated:

> The Commonwealth policy for converting mobile telephony from analogue to digital technology has caused anxiety in rural and remote areas. The analogue AMPS system is to be converted to the CDMA digital system, requiring rural users to discard their present handsets and acquire new ones.
>
> But, of greater concern is the reduction in the coverage area available through digital technology. The digital signal is more limited than analogue signals. Hence, paradoxically, people with analogue services have enjoyed a "fortuitous" service coverage that will not be available once the change to digital technology is made.
>
> This problem is heightened by the absence of a published plan to deal with such cases, other than assurances that Telstra recognises the problem and is prepared to respond to it.[41]

39 Telstra, Submission no. 287, p. 8.

40 Australian Communications Authority, Submission no. 240, p. 16.

41 Queensland government, Submission no. 257, p. 14.

In addition, since the closure of the analogue network, more than 150 complaints have been received by the ACA, about the level of service provided by the new network.

5.64 The Department of Communications, Information Technology and the Arts, told the committee:

> The present digital system, or GSM, has a number of data and value added service capabilities which are not available on the analog AMPS network. The CDMA network will, over a period of time, be capable of having the same sorts of value added services, including data transmission capabilities. The main difference between CDMA and GSM is that the CDMA technology has a greater capability in terms of breadth of coverage from inter-digital base stations than the existing digital network.[42]

5.65 The adequacy of CDMA testing was discussed in some submissions and during the committee's visits to regional areas, particularly with regard to whether CDMA will provide coverage in undulating geography and in areas presently serviced by fortuitous analogue coverage. The committee met with Telstra, which advised that investigation into the utility of repeaters that 'boost the radio signals both directions and will fill in black holes' were underway. Telstra also referred to the extension of CDMA to sites previously unserved by analogue.

> … a decision earlier this year to extend CDMA coverage to those sites which were purely GSM sites. So, there are something like 111 GSM sites throughout Australia which did not have analog coverage—to which we are extending CDMA, and that will give a major improvement to a lot of the coverage in the area. Some of the more outlying areas in particular will have quite a boost in the coverage from what their original analog was.[43]

5.66 The committee supports the recently announced inquiry to be undertaken by the ACA into whether Telstra's new CDMA network provides a reasonably equivalent service to the old analogue network. It understands that the ACA is establishing its own testing criteria to verify Telstra's claims regarding equivalent coverage and that Telstra's plans for the next phase of the CDMA rollout will also be examined to determine whether problems that arose in the first phase will be avoided in future. The committee considers that the new CDMA network must go further, however, to ensure that adequate, reliable mobile telephony is provided throughout regional Australia as soon as possible.

42 Department of Communications, Information Technology and the Arts, Transcript of Evidence, September 27 1999, pp. 161-162.

43 Telstra, Transcript of Evidence, September 27 1999, p. 205.

Recommendation 23

5.67 **The Committee recommends that, if the inquiry by the Australian Communications Authority into Telstra's new CDMA network finds that CDMA technology is not delivering adequate and reliable mobile telephony to regional Australia in the near future, the Commonwealth government develop regulation and/or targeted funding to ensure that reliable mobile telephony services are available to regional areas as soon as possible.**

5.68 The committee is aware of considerable disappointment from regional Australians that, despite a focus on the benefits of CDMA for delivering mobile telephony to rural and regional areas, the CDMA rollout commenced in metropolitan areas. It understands that closure in the five major metropolitan centres was considered necessary to be able to provide a national footprint for anybody buying a mobile service, whether in metropolitan or non-metropolitan areas. It further understands that Telstra is now proceeding with a more phased withdrawal of AMPS from regional Australia.[44]

5.69 The committee notes that the government's overall policy environment takes the needs of all users into account, including those in regional Australia. However, it considers that governments have a role to ensure that benefits are delivered to those users most in need of services, in this case, regional Australians.

Recommendation 24

5.70 **The committee recommends that the Commonwealth government adopt policies and mechanisms that require carriers to prioritise delivery of telecommunications services, so that areas already unserved are not further disadvantaged.**

5.71 The committee was advised that a particular benefit of CDMA was that it provided a direct migration path to new and developing technology including 'G3' – multiple channel digital technology that will transmit high-speed data.

44 Telstra, Transcript of Evidence, September 27 1999, p. 202.

5.72 Stewart Fist stated that, in his view, CDMA was a high capacity, short-medium distance technology, very suitable for metropolitan areas but much less so for non-metropolitan Australia. He advocated reuse of existing AMPS spectrum not taken up at auction, and release of more spectrum, in particular, very high frequency (VHF) spectrum presently reserved for television broadcasting but generally unused in country areas. (VHF is highly tolerant of obstructions and mobile receivers, and thus highly suitable for mobile telephony.)

5.73 Stewart Fist argued that local communities should be allowed to develop 'cooperative networking' solutions that could bypass Telstra using, for example, WLL technology and AMPS spectrum limited to a local region. Benefits included no local call costs, effective voice and data links, and, since service was provided only within the local network, the decision to switch to CDMA for Australia-wide mobile cellular networks would not be contravened. In his view, auctions and licensing restrictions did not provide this flexibility.

5.74 The ACA and the Spectrum Management Agency are responsible for spectrum regulation. Auctions of spectrum suitable for local multipoint distribution service (LMDS) (by satellite), mobile telephony and WLL services (CDMA) have recently been held.[45]

5.75 The committee understands that the regulatory framework for spectrum management, the *Radiocommunications Act 1992* and associated and subordinate legislation, is currently being reviewed to evaluate the appropriateness, effectiveness and efficiency of the regulatory arrangements. The submission from the Department of Communications, Information Technology and the Arts states that:

> The Government supports the introduction, wherever practical and technically feasible, of new and innovative satellite services and efficient usage of the associated radio spectrum frequencies. … The Australian regulatory framework for satellite communications is intentionally low in intervention, with coordination arrangements left to commercial negotiation between the affected parties as far as possible.
>
> The Review is examining the framework for the effective supply and utilisation of spectrum. The review is undertaken in the context of an ongoing commitment by the Government to review regulatory frameworks overall, and to take into account specific concerns raised by industry. It is expected that the net result of

45 Australian Communications Authority, Submission no. 124, p. 13.

this process will be an improvement in the operating environment for users and service receivers generally.[46]

Recommendation 25

5.76 **The committee recommends that the Commonwealth government review the guidelines for spectrum licensing and auctions with a view to releasing more spectrum, in order to maximise opportunities for competition between carriers and service providers for the benefit of regional Australians.**

Recommendation 26

5.77 **The committee recommends that the Commonwealth government deregulate that part of the telecommunications market relating to access links. In particular, the Commonwealth government should:**

- **encourage the formation of cooperative networks by individuals and communities; and**
- **develop legislative mechanisms to allow registration of cooperative networks as 'facilities carriers'.**

5.78 The South West Development Commission of Western Australia urged that carrier roaming be mandatory and that a USO be developed for mobile telephony. The committee supports policy development to achieve extended coverage of mobile telephony and considers that the emphasis should be on promoting competition through development of regional aggregated demand to attract provision of alternative infrastructure by the private sector.

5.79 It is possible that, in order to attract and retain customers, carriers will provide the infrastructure necessary to extend mobile phone coverage for their customers along highways and into areas presently unserved by them. The committee is also aware that some regional communities are demonstrating that there are innovative ways to provide mobile telephony.

46 Department of Communications, Information Technology and the Arts, Submission no. 240, p. 12.

Satellite technology

5.80 The revised USO requires the service provider, presently Telstra, to make available an asymmetric satellite service, delivering a satellite downlink service comparable to 64 kbps to the four per cent of the population not able to access ISDN. The utility of satellite technology was referred to in a number of submissions.

> Satellites particularly the proposed broadband low-earth-orbit (LEO) constellations proposed for deployment in 2002, are seen by some parties as the panacea for all telecommunications difficulties in rural areas.
>
> Whilst their application to this situation is technically feasible, the arguments for their usage in all but the remotest or semi mobile applications in rural applications should be regarded carefully, particularly from the question of;
>
> - usage cost,
> - minimalist costing regime whether physical connection is 100 kms or 1000 kms,
> - dilution of commitment to existing terrestrial applications (making it more costly for remaining users and therefore more costly for everyone),
> - loss of revenue from the area from where the telecommunications being managed,
> - increased risks of using non-locally supported telecommunications hardware and software,
> - being cut-off from the benefits of additional local services such as community education programs, broadcast news and current affairs.[47]

5.81 The Department of Communications, Information Technology and the Arts told the committee that:

> Telstra and the other carriers are talking about Internet services off the satellite and the ability to deliver telephony using the satellite, and certainly as part of the digital data requirement there is an involvement of satellite delivery there. … If you look at the sort of coverage that is envisaged from those satellites then you have to be at least reasonably optimistic that over time we are going to get the same sort of impact in terms of price reductions and coverage

47 The South West Strategy Group, Submission no. 76, p. 3.

> of services that we have had in a range of other services in this general information technology area.[48]

5.82 In October 1999, Telstra launched its new satellite technology, *Big Pond Advance*. The ACA noted that, in addition to existing, operational geostationary satellites, new global satellite systems planned for introduction between 2001 and 2003 include:

> LEO (low earth orbiting), MEO (medium earth orbiting) and HEO (highly elliptical orbit) systems. Small capacity systems suitable for low data rate applications..[are] dubbed 'little LEO' systems. Higher capacity systems suitable for voice are known as 'big LEOs. … [LEOs] are thus better suited to mobile consumer telephony and data transfer …[and] offer benefits to countries such as Australia where a significant part of the landmass has only a small percentage of the total population.[49]

5.83 The committee received evidence that Telstra has entered into roaming arrangements with Iridium regarding that company's LEO satellite system.

> … what we have done is negotiate what they call roaming arrangements with Iridium, which is the one that is commercially available today, so that these companies market a phone that can work firstly on the terrestrial cellular network and then when it loses that signal will switch to the satellite system. We would like to negotiate such roaming arrangements with other companies when they become available. … There are other alternatives, not perfect, but using the geostationary based systems, and both Optus and Telstra are using satellites and providing a degree of service with these technologies as well.[50]

5.84 The committee was advised that AAPT and Vodafone (GLOBALSTAR) have purchased spectrum with the intention of launching global satellite services in Australia in the near future and that other carriers including Macrocom, Soul Pattinson Telecommunications Pty Ltd, OMNIConnect, Horizon Communications and Iridium South Pacific (ISP) were about to offer services. Cable and Wireless Optus claims to have:

> … demonstrated delivery of voice, fax and data (outbound speeds from 14.2 bit / s) services via satellite to homes in remote areas.

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48 Department of Communications, Information Technology and the Arts, Transcript of Evidence, September 27 1999, p. 165.

49 Australian Communications Authority, Submission no. 124, p. 14.

50 Telstra, Transcript of Evidence, September 27 1999, p. 203.

> This service can be extended to include high speed Internet (downlink speeds from 64kbit/s) and satellite television.

5.85 Cable and Wireless Optus stated that:

> The main difference between satellite-delivered and terrestrial services relates to the cost of the infrastructure, or more accurately, the cost of the equipment necessary for consumers to access the services. … The major infrastructure item involved in satellite delivery of services is that of the satellite itself, so in that sense the infrastructure is already provided. Services once "up" are potentially available to everyone within the satellite footprint; in the case of Optus' satellites the footprints cover the entire Australian land mass and therefore every household and business.[51]

5.86 Cable and Wireless Optus argued that satellite services can only be provided on the basis of subsidised or USO funding because of lack of demand and volume in regional areas.

> It is in this area (the USO) that Government should take the lead if it is serious about providing not just services but choice of services to people in regional, rural and remote areas. … some form of government subsidy or USO funding for the equipment would be an appropriate means of encouraging service take up and achievement of the critical mass required to achieve affordablity and a viable rollout.[52]

5.87 Access to data delivered by satellite, however, does not address equity issues, according to several submissions. The Northern Territory government stated:

> Issues of equity include the cost of access. … The Northern Territory Government acknowledges a recent proposal to increase access to a satellite based digital data transfer system. However, it believes because the proposal includes a requirement for subscribers to contribute 50% or more of the capital cost, issues of equity remain unaddressed.[53]

5.88 The committee was advised that the government has subsidised:

- purchase of decoders to allow conversion from analogue to digital satellite signals direct to home (DTH) ($750 per consumer); and

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51 Cable and Wireless Optus, Submission no. 272, pp.2, 4.

52 *ibid*.

53 Northern Territory government, Submission no. 232, p. 16.

- for customers unable to receive ISDN, up to 50 per cent of the price of purchasing satellite receiving equipment to receive an asymmetric satellite service, delivering a satellite downlink service comparable to 64 kbps.

5.89 The Department of Communications, Information Technology and the Arts explained the situation:

> However, in the short term, DTH households and self help communities face the costs of replacing existing analog satellite decoders with digital units. Communities also need to purchase an additional decoder and transmitter to receive the second commercial television service.
>
> The Government has initiated the following measures to overcome these transitional problems for consumers, and to maximise consumer benefits.
>
> - An $11.2 million assistance package under the Networking the Nation Program to subsidise the cost of digital decoders. This will allow people living in remote Australia to retain their only means of access to television reception. About 12,000 individual households are eligible to receive a $750 subsidy to replace existing 'domestic' decoders. In addition, approximately 400 retransmission sites including just over 100 Broadcasting for Remote Aboriginal Communities Scheme (BRACS) sites, serving thousands of other remote Australians, are eligible to receive a $ 2500 subsidy (or $3500 for BRACS) to replace existing professional decoders.
> - The commitment to allocate $10 million from the Television Fund, subject to the further sale of Telstra, to subsidise the cost to self help communities of an additional transmitter and decoder to receive the second commercial television service.[54]

5.90 Nevertheless, the committee remains concerned about the cost and timing of service delivery through satellite technology to regional Australia, in particular the ability of satellite technology to compete with terrestrial mobile technology such as Telstra's CDMA network that will cover up to 95 per cent of the population.

54 Department of Communications, Information Technology and the Arts, Submission no.240, p. 10.

Recommendation 27

5.91 **The committee recommends that the Commonwealth government work with state and territory governments, local government, communities and industry to develop partnerships to determine affordable, telecommunications solutions that meet community needs, including through satellite delivery.**

Government response – the USO

5.92 The original definition of the USO, established to ensure adequate provision of telecommunications to all Australians, 'was only intended to cater for the provision of a basic voice grade service and data capability set at a very modest level, often barely sufficient for even fax machines to operate satisfactorily'.[55]

5.93 In 1998, the ACA conducted a review into whether the USO should be upgraded to include a digital data capability broadly comparable to a 64 kbps ISDN service.

5.94 The government's 1998 response to the ACA report included strengthening the USO, a range of funding commitments aimed at improving the quality of the CAN, and the establishment of a National Bandwidth Taskforce. The committee understands that preliminary findings of the National Bandwidth Inquiry highlight the changing economics of communications services due to the paradigm shift from voice to data based technology that is underway.

5.95 Telstra considered that the competitive market is delivering alternative high bandwidth products to rural and regional markets.

> Investment in higher bandwidth services are occurring in a competitive market, and irrespective of minimum service standards prescribed under USO arrangements. On balance, telecommunications reform has opened up access to a range of new services and competing service providers operating across geographic markets.
>
> In considering these issues it is important to note that Australian consumers, including rural consumers, have substantially greater

55 South Australian Department of Administrative and Information Services, Submission no. 302, p. 3.

> opportunity than their counterparts overseas to access the Internet using high-speed services. For example, ISDN links are significantly more widely available in Australia than in at least two other countries for which data are available.[56]

5.96 The ACA report concurred with this view, concluding in part, that:

- Digital data services broadly comparable to ISDN will be accessible to all people in Australia by the end of 1998 through Telstra meeting its license condition and its proposed satellite delivery system.
- Extending the USO to include digital data capability equivalent to ISDN was not economically justifiable and that new technology and new service providers will provide market based solutions progressively over the next 5 years.[57]

5.97 The requirement to make ISDN available to 96 per cent of the population is not defined at a regional level. The concentration of population in capital and other cities means that the percentage of population in regional areas with access to this service is therefore much less than 96 per cent. In addition, the standard provision for the four per cent of the population unable to receive ISDN is one way data access capability - a major constraint on e-commerce and more sophisticated internet use.

> The Northern Territory Government also notes that the proposal is only for a one-way link, using a satellite receiver, and existing telecommunications infrastructure for traffic from the user. This will not be sufficient to meet the needs of applications requiring significant bandwidth capacity, for example, telemedicine.[58]

5.98 The Southern Province Projects Group in Western Australia told the committee during its visit to Bunbury of the limitations of copper wire in delivering ISDN.

> 28.8 kbps is nominated as the necessary line speed for teleworking and access to internet services. Without ISDN capability, the best copper line is capable of is 38.8 kbps. However, in many cases…it is well below 28.8 kbps and lower than 14 kbps. … Even with the best quality copper wire, ISDN services cannot be delivered further than 5-6 kms from an exchange.[59]

5.99 The ACA's report provided, for the first time, a summary of the quality and level of data services available in the CAN throughout Australia, and

56 Telstra, Submission no. 287, p. 4.

57 Australian Communications Authority, Digital Data Inquiry, Public Inquiry under section 486(1) of the Telecommunications Act 1997, August 1998.

58 Northern Territory Government, Submission no.232, p. 86.

59 Southern Province Projects Group, Telecommunications Infrastructure in Regional WA, p. 4.

the costs and benefits associated with upgrading that network. The costs estimated by Telstra for the CAN upgrading were too high in their view.

5.100 The committee is aware of disagreement with the ACA report. As the South Australian government stated:

> Many in the industry have criticised the [ACA] report saying that its findings were naive and did not show sufficient foresight…Therefore, many regional communities, particularly the smaller and more remote communities will always depend to some extent on the standards of service provided by the USO.
>
> It is important that, in the current debate on the actual cost and technical definition of the USO, the needs of regional communities for both voice and data services are recognised. The standard set, particularly for data services, should not leave some rural residents with a 'walking track' connection to the information highway.[60]

5.101 On the other hand, the committee was also advised that more bandwidth was not necessarily a primary determinant of good communications. Stewart Fist claimed that much of regional Australia's information requirements could be delivered by 'trickle technology', that is, through constant flow of data in and out using 'always on connections', rather than through purpose driven connection to the internet. This type of arrangement would not require the much higher bandwidth being requested by regional Australia.

Current developments concerning the USO

5.102 During its visits to regional areas, the committee was advised that the 'safety net' nature of the USO meant that, even if it were deliverable to regional areas, it would be very inadequate for the needs of regional businesses. Compliance with the USO was another issue of concern in regional Australia. The Department of Communications, Information Technology and the Arts told the committee that:

> As the regulator, the Australian Communication Authority is responsible for monitoring universal service providers' compliance with their obligations. … In addition, carriers who are universal service providers—and this would include the new declared digital data providers—must prepare universal service, or digital data, plans which document how they propose to comply with

60 South Australian Department of Administrative and Information Services, Submission no. 302, p. 4.

> their obligations and those plans must go through a process of public consultation.[61]

5.103 The committee is aware that three issues relating to the USO (current costing, future funding and consideration of how best to introduce USO contestability) are presently under review and that their resolution will be considered in conjunction with implementation of the Social Bonus package.

5.104 The committee considers that the review should be undertaken with a view to ensuring the delivery of broader services to regional areas. It considers that there is a need to continually assess the USO to ensure equality of access is maintained as technology develops. It is aware of debate as to whether provision of a range of standard services (based on provision of infrastructure) will engender demand for enhanced services, thereby removing the need for a USO.[62] Incentives for competitive provision of infrastructure may stimulate this scenario.

5.105 The committee understands that contestability of part or all of the USO is being considered with a view to promoting increased competition leading to more innovative services, improved service standards, better prices and encouragement for more provision of infrastructure and enhanced services by more carriers.[63] It considers that 'cherry picking' by carriers and avoidance of their USO service obligations is unacceptable.

> An effective tendering process encompassing all aspects of the telecommunications related social bonus initiatives must be employed to ensure the long-term interest of rural and regional Australians are meet. The Farmwide Point of Presence solution should be seen as a blueprint for the provision of Internet services to the remaining rural and regional Australians that do not currently have local call Internet access. [64]

61 Department of Communications, Information Technology and the Arts, Transcript of Evidence, September 27, 1999, pp. 170-171.

62 Public Forum on Regional Communications Issues held by the Department of Communications, Information Technology and the Arts in November 1999.

63 *ibid*.

64 National Farmers Federation, Submission no. 238, p. 2.

Recommendation 28

5.106 **The committee recommends that the Universal Service Obligation be extended to include internet access for all regional Australians, and that delivery of the Universal Service Obligation be undertaken so as to ensure promotion of competition in the provision of telecommunications infrastructure in regional Australia.**

Targeted funding intervention

Networking the Nation

5.107 The $250 million Networking the Nation (NTN) program was funded by the Commonwealth government in 1997 to assist the economic and social development of rural Australia through projects that:

- enhanced telecommunications infrastructure and services;
- increased access to, and promoted use of, services available through telecommunications networks; and
- reduced disparities in access to such services and facilities.

5.108 Many submissions and information provided to the committee during regional visits referred to projects funded through the NTN fund. As discussed in chapter 6, components of the GrowZone and Western Region Enterprise Network were funded through NTN.

> The Fund is designed to implement telecommunications projects aimed at overcoming difficulties at a regional level. The Fund provides for additional infrastructure such as establishing Internet hubs which remove the need for long distance calls to access the Internet, funding for projects designed to promote community access to online technology and assistance with relocation and training costs for businesses such as call centres moving to regional areas.[65]

5.109 A key feature of the NTN program was that funding was provided on the basis of competitive neutrality. Carriers could not apply for funding on their own behalf, and funding was generally not available for duplicative

65 Department of Foreign Affairs and Trade, Submission no. 249, p. 6.

infrastructure, although considerations of quality and price were taken into account.

5.110 As the Department of Communications, Information Technology and the Arts advised the committee:

> In most of the projects that are funded there would be some private sector involvement through the provision of goods and services into the projects. I do not know that we have kept track precisely of what the level of involvement is in each project because it is generally transactions between the funded project and the private sector participant. I would think there has been, and there is generally, a strong private sector involvement in most of the projects, particularly ones which are aimed at putting infrastructure into place.[66]

5.111 The committee is aware of considerable concern, especially in regional Australia, about this aspect of the NTN program. It understands that communities usually require advice from carriers in terms of proposed telecommunications infrastructure solutions, and that project applications may therefore need to be developed in close consultation with carriers. There is a disincentive for carriers to undertake such consultations if the outcome of grant applications is subject to open tendering.

5.112 On the other hand, the Queensland government argued for business-driven growth of regional telecommunications infrastructure through leveraging of competition. The submission referred to provision of mobile telephony in Queensland, noting that a decision to contribute RTIF funding (through the NTN program) to the cost of installing mobile infrastructure for the town of Hughenden established a 'subsidy model' as the policy for extending mobile services. The submission went on:

> Under these circumstances, the carrier may expect supplementation of the costs of providing infrastructure. In the absence of an RTIF policy for general support of mobile installation costs, local governments come under pressure to ensure that their communities do not suffer a competitive disadvantage.
>
> … Equity is an important factor underlaying all of these issues. On the one hand, major centres are provided with mobile services simply because of their market size, while on the other hand, smaller communities must pay a premium to entice carriers such as Telstra to connect them to the network. Paying to attract mobile

66 Department of Communications, Information Technology and the Arts, Transcript of Evidence, September 27 1999, p. 160.

> services effectively creates a bidding war and a "carriers' market" for what is increasingly an essential business service.
>
> The question of whether to use a USO mechanism to resolve this matter or to source funding, whether from RTIF or some other Commonwealth revenue source, requires careful examination.[67]

5.113 The committee was advised that similar funding had been provided for mobile telephony in Albany, Western Australia.

5.114 The committee considers that projects involving a private sector contribution should be considered more favourably than those without matching funding. It considers that leveraging private sector investment with initial government seed funding has been successful in a range of areas. It agrees with the Queensland government, however, in favouring competitive service provision over subsidies for particular carriers.

5.115 The committee considers that demonstration of regional market demand for tailored solutions, developed by communities working in partnership with business, could stimulate competitive service provision, given appropriate investment conditions.

5.116 The committee understands that evaluation of the NTN program has commenced with a view to refining future funding. It is imperative that the results of the evaluation be made available to regional areas so as to allow communities in the early stages of formulating project proposals to learn from the experience of other regions.

Recommendation 29

5.117 **The committee recommends that the evaluation of the Networking the Nation program be ongoing and that the results be made publicly available.**

Delivery of government services online

5.118 The significant demand by state and territory governments (and to a lesser degree the Commonwealth government) for telecommunications services in regional areas means that governments can exert considerable influence on telecommunications markets in these areas. It is estimated that use of data by government departments will increase by up to 18 per cent over the next five years.

67 Queensland Government, Submission no. 257, p. 2.

5.119 The Office for Government Online (OGO) is exploring new models of service delivery in regional areas with a view to achieving savings; improving and extending the range of services provided by government to regional staff and end-users; and improving the availability, quality and cost of telecommunications services available to the public.

5.120 OGO is responsible for the Trials in Innovative Government Electronic Regional Services (TIGERS) project, being administered and conducted in Tasmania. The committee understands that the project is using Service Tasmania infrastructure and features to trial and prototype:

- over-the-counter Commonwealth service delivery;
- a single entry point phone service providing information about services provided by all tiers of government;
- linking of selected federal, state and local government service delivery; and
- facilitation of adoption of the model in other states and territories.

5.121 The committee supports TIGERS and other OGO activities in working towards aggregation of demand for government services at all levels with a view to online service delivery. It notes that several states are now actively engaged in developing online service delivery, including Victoria (VicOne – a Statewide network encompassing all government departments in Victoria) and Western Australia (WAStep – telecommunications infrastructure funded by the Western Australian government to provide government services online throughout the state.)

Recommendation 30

5.122 **The committee recommends that:**

- **the Commonwealth government accelerate development of online electronic delivery of its services and continue to work with state and local governments to provide integrated online delivery of all government services; and**
- **that the prototypes resulting from the Trials in Innovative Government Electronic Regional Services project be made available to the whole of regional Australia.**

5.123 The ACA digital data inquiry noted the contribution of state and territory governments, particularly in the areas of health and education, to commissioning telecommunications infrastructure.

> For example, the Queensland Government had launched its *Connect.Ed* program, part of a multi million dollar contract with Telstra to roll out ISDN services to 13000 schools across the state; whilst the Victorian Government has entered an agreement with AAPT to implement its *Directions for Education* initiative.[68]

5.124 The committee supports initiatives by states, for example, Western Australia, to stimulate competition in the provision of telecommunications infrastructure in regional areas, by providing a capital injection of funds for development of regional infrastructure to provide online government services delivery.

5.125 The committee welcomes the increasing cooperation and interest in developing integrated online service delivery from all tiers of government. However, it is also aware of tensions resulting from a proliferation of networks for the purposes of aggregating demand for telecommunications services. Examples include:

- local government networks;
- state government departmental networks (for example, Queensland education department);
- statewide government networks (for example, VicOne); and
- specific industry based networks, such as that recently set up by the the Australian Wheat Board:

> Communication systems are the backbone of our recently established National Acquisition Network. The National Acquisition Network is based on putting people in the bush to talk with growers about their business, about the market and marketing options.[69]

The committee is concerned that, without ongoing funding, community online access centres that presently provide an important information link for farmers and communities, may not survive. Such centres are vitally important for educational purposes as well as for access to information for regional communities at large.

68 Australian Communications Authority, Submission no. 240, p. 12.

69 Australian Wheat Board Limited, Submission no. 137, p. 1.

Recommendation 31

5.126 **The committee recommends that the Commonwealth government continue to fund adequately community online access centres.**

5.127 In terms of the development of critical mass and the ability to attract telecommunications infrastructure investment to regional areas, development of these networks has the potential to significantly reduce regional demand and thus impact infrastructure provision.

5.128 A balance between the development of statewide and regional/community demand is needed so that community needs, in particular for telecommunications infrastructure, can be met. This will require discussion, negotiation and cooperation between state and local governments and communities.

5.129 The committee understands the importance of developing authentication for online access to government services and is also aware of the Business Entry Point initiative to develop a simpler, less costly compliance environment and to develop improved interactions with agencies of all tiers of government.

Recommendation 32

5.130 **The committee recommends that the Business Entry Point initiative include links to all government and other websites delivering online services, and that access to the initiative be made available through community online access centres and other similar facilities.**

5.131 The committee is also aware of existing unused government infrastructure that could be made available to deliver telecommunications services, for example fibre optic networks owned by departments of education or transport.

Recommendation 33

5.132 **The committee recommends that the Commonwealth government work with state, territory and local governments, communities and carriers, to determine the extent of existing telecommunications infrastructure in regions through audits, so that this infrastructure is considered in the development of regional telecommunications solutions.** (see also recommendation 10)

Integrating regulation and targeted funding intervention

5.133 As a result of decisions taken regarding telecommunications, for example, the closure of the analogue mobile network and the upgrading of telephone exchanges to digital capability, Australia has an opportunity to capitalise on these conditions by developing innovative solutions and world's best practice telecommunications infrastructure and architecture.

5.134 The committee agrees that the Social Bonus package must be properly planned and targeted, but it also considers that the telecommunications needs of regional Australia need to be addressed. It understands that, in the next 12-18 months, there is an opportunity for coordinated development and implementation of integrated telecommunications solutions using a combination of regulation (such as through a USO) and targeted funding for specific programs, using Social Bonus funds.

5.135 The Department of Communications, Information Technology and the Arts advised the committee that new NTN programs provide more flexibility and greater participation by local government, regional areas, and state governments in determining priorities for funding.

> In addition to that, one of our major policy objectives is to look at the way in which the money that is available through the Networking the Nation activity is linked with other commitments that the government has made, whether it is a commitment on extending local call zones, the mobile phone coverage, some of the funds for the internet coverage that were announced from the first part of the second social bonus package, and linking those with the developments that are taking place in the USO processes, both

> the funding and the tendering policy commitments the government has made.[70]

5.136 The committee considers that governments, telecommunications companies and communities must work together in partnership to resolve these issues. It considers that there must be incentives for the private sector to work with communities to develop affordable solutions appropriate to regional telecommunications needs, and that governments must provide leadership in this process. This will involve innovative technologies, network structures and services, alternative infrastructure provision and a regional approach to service delivery. In general, the committee favours a regional delivery approach based on submissions from regionally based organisations, rather than a nationally driven approach such as a government tender or other similar competitive process.

Recommendation 34

5.137 **The committee recommends that the Commonwealth government target Networking the Nation funding to innovative regionally based projects that will expand internet access regionally and establish and/or extend the provision of mobile telephony. Alternative infrastructure could include wireless local loops and microwave broadband networks.**

5.138 The committee affirms the importance of providing education and training for regional communities in the range and cost of telecommunications technologies available to consumers (for example, WLL or satellite technology). It also supports funding for facilitators to work with communities and regions to determine regional telecommunications infrastructure needs.

70 Department of Communications, Information Technology and the Arts, Transcript of Evidence, September 27 1999, p. 167.

Recommendation 35

5.139 **The committee recommends that the Commonwealth government encourage carriers to accept their responsibilities in relation to:**

- **raising community awareness of services already available, particularly for business;**
- **raising awareness of service opportunities that could be negotiated; and**
- **identifying and facilitating training needs of businesses and industry groups.**

Broadcasting

5.140 Gaps in SBS and, in some cases, ABC coverage were an issue in many regions across Australia. During its visit to Western Australia, the committee was advised that small communities in the south west of that state have purchased SBS services privately. It was also advised that remote towns in the mid west region that have purchased their own broadcasting facilities were better served than Geraldton in terms of radio and television (for example, SBS).

> Provision of SBS television coverage throughout the whole [south west] region is required. Lack of a service currently denies the ethnic community a linkage to their cultural heritage. … ABC Radio National is also not available across the region, a major gap in radio broadcasting services.[71]

5.141 The committee was advised that SBS coverage will be improved through the $120 million Television Fund, to be funded through the second sale of Telstra shares. The committee was advised of 'significant recent changes affecting the provision of remote area broadcasting services (RABS - satellite-delivered ABC, SBS and commercial TV and associated radio services)' that will result in 'two commercial broadcasting services throughout remote Australia in addition to the ABC and SBS'.[72] It understands that digital DTH decoders will also potentially provide access to internet, data transfer and pay TV, as these services are developed in regional areas.

71 South West Development Commission, Submission no. 119, p. 3.

72 Australian Communications Authority, Submission no. 240, p. 10.

> In the deregulated communications market, Optus and Telstra have won contracts to provide for the digital transmission of RABS [remote area broadcasting services] in remote Western Australia (elsewhere Optus is the sole provider). The Government has obtained the cooperation of broadcasters to ensure that a full RABS suite is provided on both satellite systems in WA, and that Australia's Indian Ocean territories also have access to a full RABS suite.[73]

Recommendation 36

5.142 **The committee recommends that SBS TV transmission points should be able to share existing transmission towers, including mobile telephony towers.**

5.143 The committee considers that information about the Television Fund should be more widely disseminated.

Recommendation 37

5.144 **The committee recommends that the Commonwealth government disseminate information about the Television Fund more widely throughout regional Australia, including to local government, industry and community groups.**

5.145 The committee was advised of the process of licence area planning by the Australian Broadcasting Authority (ABA):

> The ABA has completed television planning in solus (one commercial service) regional markets, and expects to complete most regional analog radio planning by the end of 1999. The remainder of regional analog radio planning, and television planning in aggregated regional markets, is scheduled to be undertaken from the end of 2000.

5.146 The committee considers that government funding for television services should not displace services that would otherwise be provided by the private sector.

73 Australian Communications Authority, Submission no. 240, pp. 10-11.

5.147 At a private meeting, the Department of Communications, Information Technology and the Arts told the committee that changes to digital transmission techniques, resulting in use of much less bandwidth by digital signals, will allow many more channels to be available to consumers. Country regions will benefit more from digital signals than the city, due to less interference.

> Digital television offers a number of benefits to rural and remote viewers. Digital broadcasting provides a quantum leap forward in television technology. Digital television has the capacity to give viewers access to high definition pictures of near cinema quality with surround sound. Television viewed in standard definition (similar to today's television definition) will also be of a better quality with less 'ghosting' and improved reception within coverage areas.
>
> Digitisation provides more efficient use of spectrum and digital transmissions will enable a range of new information services to be delivered along with the main television programming, via the television set. 'Datacasting' in this way offers the opportunity to provide large volumes of tailored data to regional and rural Australia. Although the ultimate scope of broadcast data services is not clear, there are early indications of interest from potential new players in this market.[74]

5.148 In December 1999, the government announced legislation concerning the introduction of digital television transmission broadcasting in Australia. The proposals included loaning additional spectrum to free to air (FTA) broadcasters to enable broadcasting in digital and analogue modes from the commencement of digital transmission on 1 January 2000. FTA broadcasters will be required to continue to offer existing analogue broadcasts for at least eight years, and also to provide both high definition (HDTV) and standard definition (SDTV) digital services. Metropolitan broadcasters will be required to provide 20 hours per week of HDTV within two years of the commencement of digital broadcasting, while digital broadcasting must commence in regional areas by 2004. Because of the number of transmitters involved, rolling out a full digital service in regional Australia will be a huge task. The intention is that people in regional areas currently receiving an analogue service should receive a digital service of at least equivalent coverage and quality by the time of the closure of analogue services.

74 Department of Communications, Information Technology and the Arts, Submission no. 240, p. 11.

5.149 The committee is aware that the government is presently considering 'measures under the Regional Equalisation Plan to assist regional television broadcasters in the transition to digital terrestrial broadcasting'.[75] It strongly supports practical assistance to regional broadcasters to enable the provision of digital transmission services to regional Australia of equivalent coverage and quality to that available in metropolitan areas.

5.150 New datacasting services offering a variety of information, education, advertising, shopping and news services will be possible when digital spectrum planning is completed by the ABA (expected by April 2000), allowing spectrum auctions to aspirant datacasters. As the licensing of new FTA broadcasters is prohibited until after 31 December 2006, datacasters will not be able to offer a 'de facto' broadcasting service.

5.151 The NFF argues that communities should have the ability to determine the relative merits of datacasting and television.

> The guidelines covering criteria relating to the expansion of television reception and coverage must cater for communities and individuals who may consider an aggregated data stream that includes television is a more cost effective than duplicated services.[76]

5.152 Similarly, with a view to promoting true competition, Stewart Fist argued for:

- equal access for any program provider to any form of transmission medium (terrestrial ultra high frequency, VHF, multipoint distribution service (MDS), satellite, coaxial cable) at low annual licensing costs; and
- freeing up of communications spectrum.

Recommendation 38

5.153 **The committee recommends that the Commonwealth government ensure that people living in regional areas have access to digital broadcasting services of the same level and quality as metropolitan areas as per the legislation.**

75 Department of Communications, Information Technology and the Arts, Submission no. 240, p. 11.

76 National Farmers Federation, Submission no. 238, p. 2.

5.154 The committee commends the legislation that passed through the Commonwealth parliament at the end of 1999 to allow 'out of area' free to air (FTA) commercial terrestrial broadcasting services for people currently unable to receive terrestrial broadcast services. With ABA certification, individuals and communities can become eligible to receive this 'out of area' terrestrial service. The committee considers that this program should receive greater publicity.

5.155 These services will generally be delivered via satellite. This is estimated to cost the receiver between $1 200 and $1 500 for the necessary equipment.

5.156 The committee is concerned that people in regional Australia who currently receive poor terrestrial reception or no signal will not in the future be able to receive a digital signal at all.

5.157 The committee is aware that the Commonwealth government already provides a 50 per cent discount off the purchase price of ISDN receiving equipment for satellite telecommunications service delivery, funded under RTIF (see paragraph 5.88).

5.158 The committee considers that this model of providing assistance to overcome communication difficulties should be extended to provide both 'out of area' free to air broadcasting services via satellite, and future digital services to those communities that, because of their geographic location, do not currently receive terrestrial broadcasting services and will be unable to receive a digital signal.

Recommendation 39

5.159 **The committee recommends that the Commonwealth government use the ISDN satellite service subsidy as a model:**

- **for assisting communities to receive existing free to air broadcasting services via satellite; and**
- **to provide access to digital services to communities which, because of their geographic location, would otherwise be unable to receive a future digital signal.**