

Isolated Children's Parents Association Qld Inc.

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Lobbying for opportunity, equality & support for all rural and remote students

SUBMISSION

*to the Telecommunications Universal Service Obligation Inquiry
Productivity Commission
GPO Box 1428
CANBERRA CITY ACT 2601*

www.pc.gov.au/inquiries/current/telecommunications

The Isolated Children's Parents' Association Inc. (ICPA Qld Inc.) advocates for equitable access to quality educational opportunities for children in rural and remote areas. ICPA Qld Inc. represents forty-six branches, comprising over 1200 families throughout rural Queensland.

ICPA Qld Inc. is a voluntary apolitical parent organisation and is the only community based parent group with interests in all sectors and levels of education – state schools, independent, church or boarding schools, early childhood and care through to tertiary education and all methods used to facilitate access to that education.

The Queensland State Council of ICPA Qld Inc. welcomes the opportunity to make a submission to this USO enquiry.

This submission contains no material supplied in confidence and may be placed on the Productivity Commission's website

Many of our member families are dependent on Schools of Distance Education for at least their primary schooling. For the effective delivery of curriculum which has elements comprising voice, data and video transmissions both the school and the home classrooms must have communications systems of sufficient capacity. At present many families struggle with systems that do not reliably meet these requirements.

The dependence on reliable Telecommunication services increases with geographic isolation. Over 70% of Australia's landmass has no mobile coverage. Coupled with this, inhabitants of rural and remote areas often have no regular face-to-face access to services, and rely on telephone and data services for health, education, business and social needs.

The need for a standard telephone service is particularly vital for students who have no reasonable daily access to a school due to geographic isolation and who therefore study via distance education.

Furthermore, a quality telecommunications service is a fundamental requirement, necessary to attract and retain young families and professionals to rural and remote communities.

Equal prices and charges for calls is an important feature of the USO. Governments do not provide many essential services in regional and remote communities, relying on telephones, and increasingly computers, as a means to interact with the people. This reliance places a moral obligation on the governments to provide the communication service, and at an equitable cost.

For the many occupants of Australia who have no mobile coverage, a mandated right to a fixed telephone service and a reliability guarantee is essential. At present, this is covered by the Telecommunications Universal Service Obligation (USO) and Customer Service Guarantee (CSG).

While the current system needs improvement, a legislated service guarantee is critical, as much of regional Australia does not have a viable alternative.

Since July 1999 data has been recognised as an essential service within the USO legislation, but not enforced. However, the specified minimum speed of 64 Kb/s is completely outdated for today's digital technology. Education Queensland advise that Distance Education participation requires a download speed of at least two Mb/s. Minimum data speeds should cater for all health and education needs. Nbn could be considered as a USO data provider if it can and will commit to minimum performance standards sufficient for health, education, business and social needs. At present, however, suggested repair times for nbn services far exceed the requirements under the USO CSG.

With average Australian data usage of nearly 60 GB per month for each person (Australian Bureau of Statistics data) and the average household use listed as 175 GB per month in 2014 (Queensland Courier Mail) congestion on the nbn LTSS seems assured. Average data usage is increasing by 22% per year. At this rate, average data usage per person will be over 160GB in five years, necessitating significant investment in infrastructure to meet the requirements of a USO type service that would allow for reasonable parity across Australia.

ICPA (Qld) Inc. view the USO as absolutely essential, given the reliance on fixed phones across so much of Australia. While ICPA (Qld) Inc. welcomes the opportunity to argue for a much improved minimum standard, it is imperative such a standard is legislated. Suggestions that the USO is no longer necessary because of mobile phone availability, advanced technology and the nbn ignore the reality of the technological chasm experienced by residents of isolated areas. Together with the aging population, the increased percentage of Australian students living with a disability or impairment only enhances the need for the provision of a guaranteed telecommunications service suitable for their needs.

Mobile coverage is important, and all reasonable efforts should be made to extend the footprint. However, with current technologies, diverting USO funding to expanding the mobile service would not achieve total coverage in our lifetimes.

Round one of the Mobile Black Spot program will fund 499 sites for a cost of \$374.05 Million, or an average cost of \$749,600.00 per site.

(<https://www.communications.gov.au/what-we-do/phone/mobile-services-and-coverage/mobile-black-spot-programme>)

This will increase handheld coverage by 68,600 square kilometres, or a little less than 1% of the land mass. (137.5 square kilometres per site, on average.) Given Australia has a surface area of 7.692 million square kilometres, with over 70% outside of coverage area, many inhabitants will remain reliant on fixed line telephone services, including geographically isolated students who require telephone service access daily in order to participate in distance education lessons. A voice service safety net is absolutely essential.

While mobile coverage extends to most, many do not have coverage via a hand-held mobile phone within their homes. Pockets of poor coverage exist in many areas, irrespective of the larger expanse without any service.

Problems such as the lack of mains power for mobile tower sites (solar is impractical with existing technologies) and the lack of back-haul opportunities (by which calls are transferred to the main-stream network) make much of isolated Australia even more difficult to connect to the mobile network.

Current CSG payments for service interruptions are inadequate. Subscribers can wait for as long as several weeks before faults are rectified, and this appears to be an increasing trend. CSG payments are a small consolation for the financial costs to business, the interruption to education, the stress of being isolated in an emergency and the lack of access to the Royal Flying Doctor Service.

Payments should increase exponentially with fault duration or recurrences of the same fault. ICPA (Qld) Inc. has a copy of a Telstra email stating, *"please be advised that case number 156344016 reported on the 27th of May has been rectified as at the 16th of July."* This particular family resides approximately 170 km from the nearest mobile coverage, and was fortunate to be able to raise a neighbour on a UHF radio when dealing with a life threatening medical emergency during this time.

Fault reporting should identify customers or local districts where outages are more frequent or of longer duration than the average. Members report districts with numerous service failures, and these should not be overlooked by averaging fault reporting over greater regions.

Telstra have provided a service to many customers by Next G Wireless Local Link (WLL over the mobile network) technology. These customers have been required to sign a waiver of their USO CSG rights as a condition of connection. As a choice of carrier is no longer a requirement of a USO-compliant service, ICPA (Qld) Inc. believes that these and future WLL services should be considered as a USO service.

Some telephone services are provided in isolated areas utilising satellite, namely Telstra's USO-Sat. This is provided as a standard USO service. This satellite service has the ability to operate as a "single hop" system when calling between other USO satellite users. This technology allows calls to be routed directly via the satellite eliminating the need to double hop. This minimises the effect of latency or delay inherent with geostationary based satellite systems. This technology is only possible if all of the users are on the same satellite or on the same spot beam in the case of satellites with multiple spot beams.

The nbn Sky Muster satellite system does not incorporate this technology so all Voice Over the Internet Protocol (VoIP) satellite to satellite calls will double hop and will therefore have latency issues. While single hop is not currently a requirement of a compliant USO satellite service, ICPA (Qld) Inc. believes that it should be.

PERFORMANCE OF SATELLITE TECHNOLOGY FOR VOICE

For satellite customers, nbn cannot be considered as a USO provider for telephony. Since the roll out of the nbn Sky Muster service, there have been suggestions that the fixed telephone service may be adequately replaced by Voice Over the Internet Protocol (VoIP), meaning telephone communication would be delivered over satellite internet technology.

For the many distance education students reliant on satellite technology to access curriculum and interactive web conferencing lessons with classmates and teacher, the VoIP methodology would cause significant latency issues due to double hopping from one student on satellite to another student on satellite. This would mean that the overall experience of a class lesson would be hindered and interactive group lessons like music would not be possible. It is important that the fixed telephone system be the default for voice communication in distance education home schoolrooms.

While recent technological advances have increased satellite capacity, the capacity available on an entire satellite is much smaller than that available on a single strand of optic fibre.

The following is an extract from a study by American company Vantage Point Solutions for the United States Federal Communications Commission, (FCC) and demonstrates why satellite technology should only be considered when there are no other viable alternatives.

<http://apps.fcc.gov/ecfs/document/view?id=7520956711>

With interactive two-way traffic, such as voice and broadband data services, complications arise due to limitations innate to satellite communication systems.

These complications include the following: -

High Latency – *The most common satellites used for the delivery of fixed broadband services, geostationary satellites, are located more than 22,000 miles above the equator. Because of this distance from the earth, voice and broadband applications have latency that exceeds industry standards and is more than 20 times the latency of typical landline communications.*

Capacity Limitations – *Satellite broadband uses a limited amount of spectrum that is shared by all satellite users. As more customers are added or if the existing customers begin to utilize more capacity, exhaustion of satellite capacity can become a significant issue.*

Environmental Impacts – *Satellite communications become unreliable under certain environmental conditions. The frequencies utilized by satellite systems are susceptible to outages during heavy rain, ice, or snow conditions. In addition, twice a year sun outages occur for many days in a row, and each can last 15 minutes or longer.*

The broadband performance of satellite services in terms of latency, jitter, capacity, and speed will always remain inferior to modern fixed wireline technologies. Some satellite limitations may be made less severe with technical advances, but some limitations, such as high latency and weather interference, cannot be solved. While satellites will continue to provide an important role in global communications, satellites do not have the capacity to replace a significant amount of the fixed

wireline broadband in use today nor can they provide high-quality, low-latency communications currently available using landline communication systems.

Sun Interference

Twice a year the sun crosses behind each geostationary satellite as it is viewed from the ground station. During these periods in the spring and fall, the alignment of thermal noise from the sun with the satellite signals causes a temporary loss of signal. The duration of the outage depends on the satellite ground station location, satellite orbital location, size of the antenna, and the signal frequency.

Quantitative Quality of Service (QoS) Metrics

Packet loss, traffic prioritization, compression technologies and bandwidth all contribute to the overall quality of a satellite Internet Protocol (IP) call. The primary QoS measurements are latency and jitter, of which latency is the primary barrier to quality satellite-based voice communications. Regarding the impact latency has on users' experience, the United States Federal Communications Commission stated in OBI Technical Paper No. 1 ("OBI No. 1"):38 ...latency associated with satellite would affect the perceived performance of applications requiring real-time user input, such as VoIP and interactive gaming. Not only does this delay have a potentially noticeable effect on applications like VoIP, but it would also be doubled in cases where both users were using satellite broadband (e.g., if two neighbours, both served by satellite VOIP, talked on the telephone). Given that most voice calls are local, this could become a significant issue for rural areas if all calls must be completed over satellite broadband.

International Telecommunications Union Recommendation G.114 specifies a maximum round-trip latency threshold of 300 ms for acceptable voice services. As shown in Section 4.1.1, the round-trip latency for satellite signals is between 500 and 600 ms— twice the allowable threshold. With this level of latency, the quality of service leads to a poor user experience, as discussed below.

Packet loss or packet corruption also causes degradation of voice quality. Therefore, if packets are lost due to congestion, weather interference, or other issues, the voice quality will suffer greatly.

Because of satellite susceptibility to these issues, the use of satellite as a replacement for traditional landline service (or terrestrial wireless) for voice communications is not desirable, especially when the service involves 911 (000) and other critical services.

While the above is American data, the physical limitations are the same. The Skymuster satellites operate in the Ka frequency band, which will increase the susceptibility of weather-related outages. Representatives of nbn informed the 2015 ICPA (Qld) Inc. State Conference they expected outages or severely degraded performance from this service for about ten days a year in the tropics, lesser impact elsewhere.

ICPA (Qld) Inc. believes technology has not yet provided an alternative to a USO mandated fixed telephone service for rural, remote and isolated subscribers. Given the current demographic trends in rural, remote and isolated areas, the retail market for relevant services will not deliver appropriate outcomes for consumers unless such retail service providers are required by legislation to do so.

While the issues paper questions the justification for maintaining both the nbn and USO in high cost (remote) areas, these areas will usually be nbn satellite consumers. To consider the nbn satellite as a reasonable alternative to a current USO service would only further enhance the divide between

these people and those with access to other technologies. Further marginalising of these people should not be an option.

For Australians living beyond mobile service coverage areas, much of the Productivity Commission issues paper details services that are unavailable to them. Very little emphasis has been placed on the welfare of this sector of the population. Even calling line identification, listed as part of a standard telephone service, is not universally available.

For the many occupants of Australia who have no mobile coverage, a mandated right to a fixed telephone service and a reliability guarantee is essential. Universal availability, affordability and accessibility is not only desirable, it is critical. This should be the absolute foundation of any future policy, providing equity for all Australians.