

Submission to the Productivity Commission's Telecommunications Universal Service Obligation Inquiry

EXECUTIVE SUMMARY

The Wamboin Communications Action Group (WCAG) represents the communications interests of the Wamboin, Bywong and Sutton areas on the urban fringe of Canberra. However we believe our submission is equally speaking for all urban fringe and regional areas of Australia who have been relegated to substandard communications infrastructure for successive decades since privatisation of the telecommunications services.

We believe a strong new Telecommunications Universal Service Obligation (TUSO) is required to bridge the digital divide that has grown between metropolitan areas and the surround urban fringe, regional and remote parts of Australia.

The NBN Sky Muster service is the typical example of a not fit-for-purpose service that is imposed on non-metropolitan areas due to lack of care, foresight and planning and which further widens the chasm between the inner parts of big cities and the rest of the country. A TUSO must prevent the Sky Muster service from being used as a default service to areas that are in no way remote and which already have fixed line ADSLx service present.

Our proposal for a TUSO would see the minimum service requirements expressed as ratios to Central Business District (CBD) connection values. In this way we would ensure the TUSO would automatically update minimum requirements annually based on exponential growth in the communications infrastructure needs – rather than remaining fixed (like the present TUSO) which sees the rapid growth of a digital divide due to out-dated policy requirements.

Our TUSO minimum requirements include provisions for average (area wide) and individual connection point download capabilities of the communications network in order to avoid the absolute minimum becoming the default by which all regional users are measured against – a practice which has led to the current digital divide and lack of investment in regional areas.

We make specific recommendations as to how a TUSO could be implemented in a way that would see continued investment in regional communications based on fixed shorter term contracts.

Further, we outline our concerns regarding the interim phase before a new TUSO is adopted; especially our concern that without additional interim measures, existing ADSLx facilities will be allowed to degrade further, without a suitable substitute network being available (Sky Muster Satellite not being considered as a suitable replacement for ADSLx).

Submitted to the Productivity Commission on behalf of WCAG by Olaf Theden

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
TABLE OF CONTENTS	2
INTRODUCTION.....	3
BROADBAND AS AN ESSENTIAL SERVICE	4
DIGITAL DIVIDE	5
NBN SATELLITE NOT FIT FOR PURPOSE.....	7
<i>Data speeds</i>	7
<i>Data throughput (User quota)</i>	8
<i>Latency</i>	9
<i>Reliability</i>	9
<i>Affordability</i>	10
REQUIREMENTS FOR A NEW TUSO	13
<i>A new TUSO should have the following characteristics</i>	13
<i>Recommended TUSO requirements</i>	13
HOW TO IMPLEMENT A TUSO	15
INTERIM MEASURES.....	16
CONCLUSION	16
REFERENCES	17

INTRODUCTION

The Wamboin Communications Action Group (WCAG) was formed by members of the local communities of Wamboin, Bywong and Sutton (NSW) in order to lobby for better, more reliable and affordable communications for our area. We represent an urban fringe area that has been neglected by successive public and private communications infrastructure rollouts, to the point where we have now been classed as “rural-remote” and subject to receiving satellite data/voice services via NBN Sky Muster, even though we are just 10km from NBN fibre served suburbs of Canberra and the majority of the area has views of Parliament House or Telstra Tower (ACT) (see Figure 1).

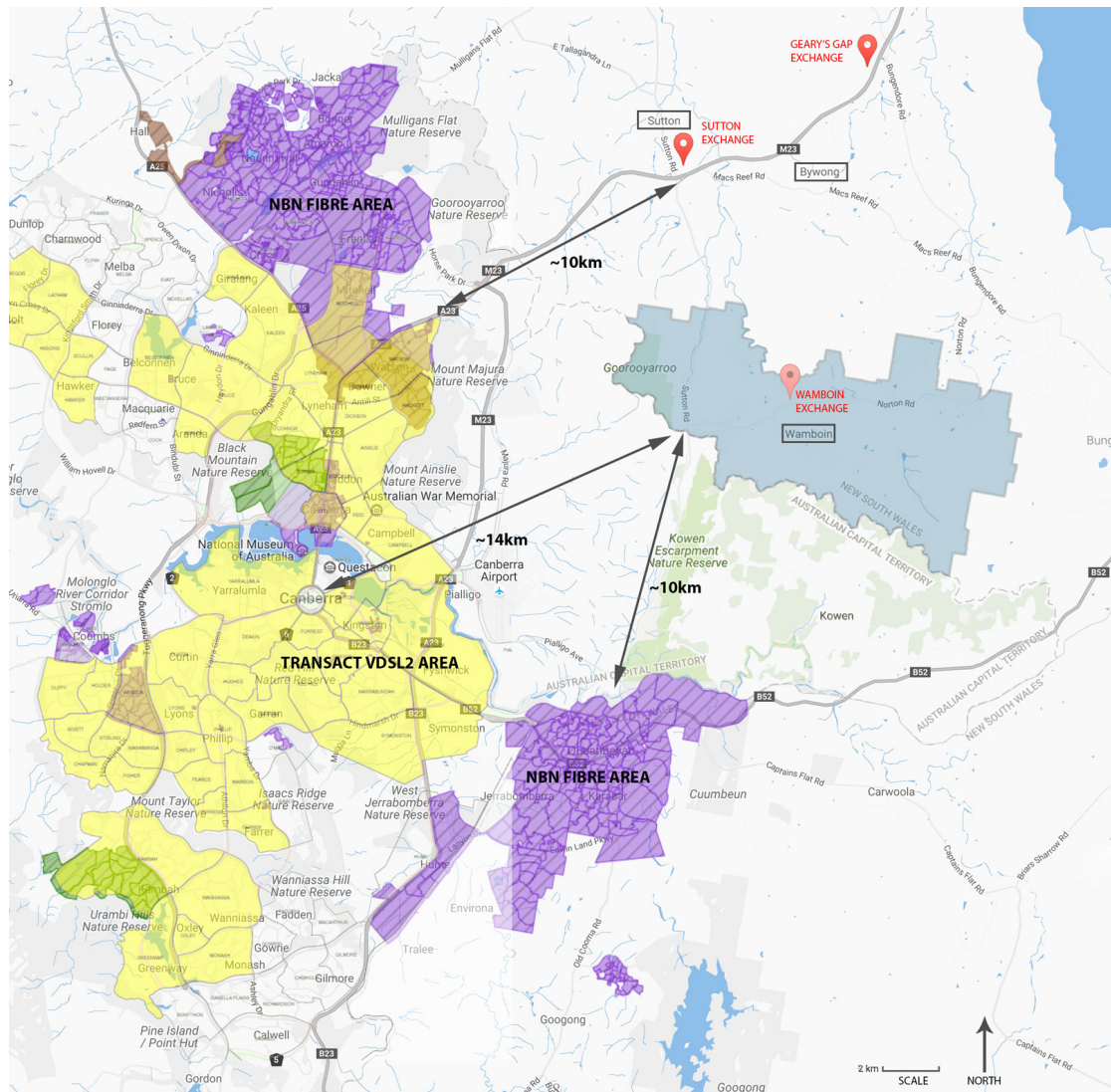


Figure 1: Wamboin, Bywong and Sutton communities on the urban fringe of Canberra (ACT).

Our area consists of over 1500 premises, or more than 3500 people; and while our focus is on the area we serve, we believe our submission makes valid points supporting the 400,000 premises, or 1,000,000 Australians who are now in the NBN Satellite footprint.

We are of the firm belief that a strong, suitably formulated and forward looking Telecommunications Universal Service Obligation (TUSO) is the only way to ensure fair and reasonable access to the essential service of broadband and voice communications to areas

such as ours, and the only way in which the “digital divide” between metropolitan areas and regional/remote areas can be reduced in a fair and equitable manner.

This submission wishes to address some of what we believe are shortfalls, omissions or lack of understanding shown in the Telecommunications Universal Service Obligation – Productivity Commission Draft Report November 2016.

We do not intend to cover all aspects of this TUSO Draft Report, but wish to emphasise certain aspects of it in order to ensure our voices are not missed and that the TUSO is not manipulated by vested interests without regard to the fair provision of essential services to all Australians.

BROADBAND AS AN ESSENTIAL SERVICE

We firmly support the notion that the current TUSO based on voice telephony is no longer fit for purpose in the current digital era. We believe that *broadband* (defined as a data service capable of providing the required data amounts at the speeds required to keep up with growing demands) is the new ‘essential’ service of this century. By essential service, we categorise broadband together with other essential services such as water and power.

The vast majority of community interactions are now occurring in the digital, Internet connected sphere. Business, education, shopping, entertainment and social connections are now all occurring online, at increasing speed and utilising increasing data amounts. Without adequate access to broadband communications, individuals, communities and vast areas of the country would be left behind in a ‘digital dark age’.

DIGITAL DIVIDE

What we have witnessed over the past few decades since the privatisation of communications services in Australia is the progressive decline in communications accessibility in urban fringes, regional and remote areas. With the current static TUSO focused purely on providing voice telephony services, the digital divide between metropolitan data networks and regional areas has grown to alarming proportions. The static TUSO was defined in such a way that it did not move along with technology and society, and has therefore not prevented the current gap between those who have and those who have not got access to adequate broadband services (see Figure 2).

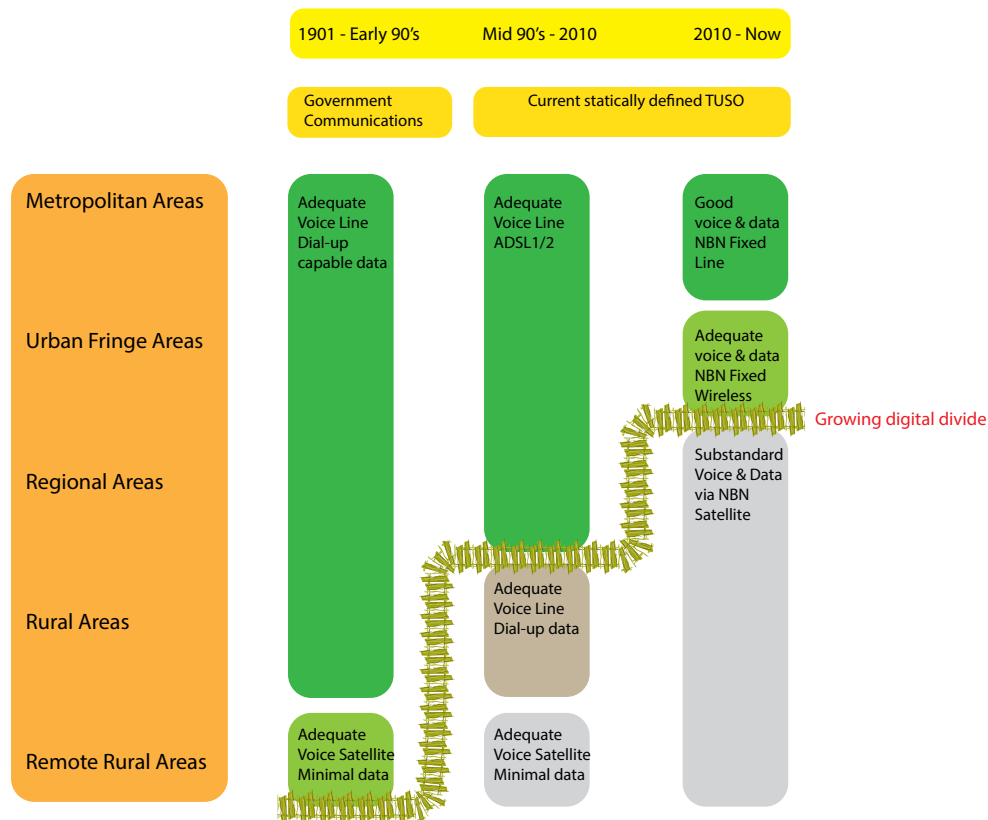


Figure 2: The growing digital divide between metropolitan areas and the rest of the country under the current voice-centric TUSO.

The technological changes as data has become more important than just voice communications have seen the fixed-line network being augmented with ADSLx services that have largely served the majority of Australians. However, the advent of VDSL, cable and modern fibre networks in urban centres has seen the data capacity and use (both in terms of speed and volume) in these centres take off astronomically compared to the remaining fixed line and satellite communications networks.

We must therefore make a strong objection to the key point outlined within the draft report, and repeated in various ways throughout the report:

- *The sizable public investment in National Broadband Network (NBN) infrastructure is planned to provide universal access to high-speed broadband services to all premises across Australia by 2020 — at a quality that is far superior to what is currently available. By design, the pricing strategy adopted by NBN Co Limited will see wholesale prices capped across all its technology platforms and across all locations, thus significantly narrowing the digital divide across rural, regional and urban Australia.*
- *To the extent that there are any remaining availability, accessibility or affordability gaps once the NBN rollout is complete, current trends and existing policy settings suggest that these are likely to be small and concentrated, and amenable to specific social programs rather than large scale government interventions such as the TUSO.*

The NBN rollout has in no way addressed the growing digital divide that has appeared in Australia since the mid 90's. In fact, we would argue that the NBN's use of different technologies across the country will only add to, and exacerbate the digital divide.

As figure 2 shows, where Australians once enjoyed a harmonious, largely equal access to a 'plain old telephone service (POTS)', now that data is the key driver of economic and social wellbeing, the use of differing technologies has created a huge 'us and them' gap which is now creeping in from the truly remote rural (which have been served by satellite from before NBN days) right into the urban fringes (which used to enjoy at least some data equality with their metropolitan neighbours via ADSLx services). By moving a vast group of former fixed-line ADSL enabled regional areas onto the NBN satellite service, the digital divide has just been moved to the doorstep of the cities.

A strong new TUSO that covers the provision of adequate data and speeds to all areas of the country would not have let this happen. And, since the digital divide now needs closing; a strong new TUSO must put pressure on NBN, Telstra and other distribution network providers to do better and to ensure the regions remain connected even if this means rolling out networks at slightly less profitable margins. Without strong government intervention, the Australian population will not see a fair access to current and future communications infrastructure and the social problems this creates will become a huge burden to future generations.

NBN SATELLITE NOT FIT FOR PURPOSE

While we see that the draft report starts off with graphs highlighting the 50% data growth each year, we find it particularly concerning that the whole remainder of the report focuses heavily on providing voice services and talks only minimally about data speed provisions while ignoring data volumes nearly entirely. It continues to propagate the myth that the current NBN Sky Muster satellites are providing an adequate data network for those connected to it.

WCAG would like to make this very clear:

The NBN Satellite service (in its current form with an expected 400,000 subscribers) is NOT fit for purpose to meet even existing data requirements, let alone meeting requirements in 5-10 years.

To support this claim, we argue that in order for a service to be fit-for-purpose, it must meet or exceed basic requirements of:

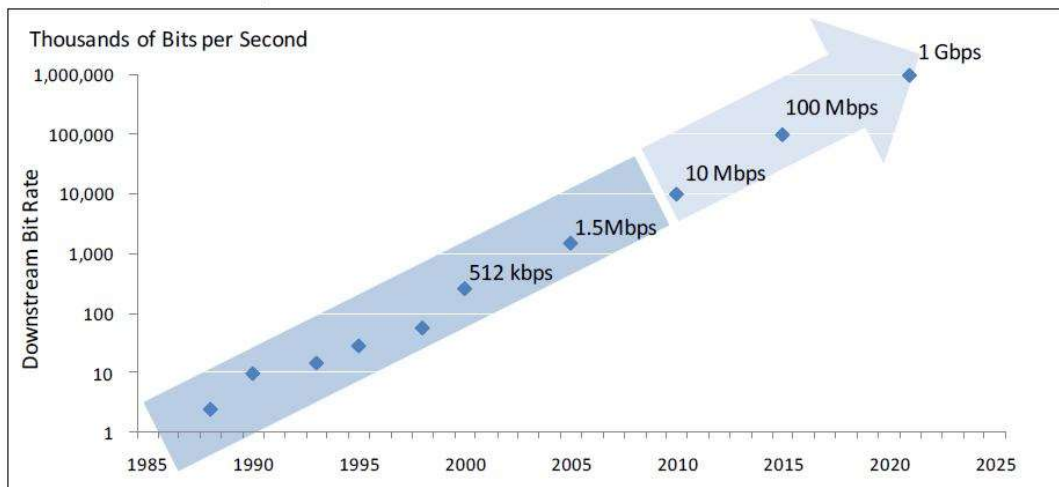
- Data speeds (Download and upload)
- Data throughput (available data quota for end subscribers)
- Latency
- Reliability
- Affordability

We believe the current satellite service as it is proposed cannot meet any one of the above criteria:

Data speeds

While NBN Co is quite vocal about advertising Sky Muster's headline speeds of 25Mbps down and 5Mbps up, these speeds represent the bottom line of expectations for broadband today. Data speeds have increased 10x every 5 years (see Figure 3)¹.

Exhibit 2.12: Download Speeds since 1985



Source: NBN Co, Alcatel-Lucent (refer Exhibit 9.21)

Figure 3: Internet Speed growth according to the NBN Corporate Plan.

As such, a service which provides 25/5 Mbps connections now, would be expected to provide 250/50 Mbps in 2022 and 2500/500 Mbps by 2027. The satellites are obviously not upgradeable and can only be augmented with future newer satellites. However, to meet these speed increases even in 5 year steps would have required the next fleet of satellites to have been launched last year, not sometime in the next decade(s).

Data throughput (User quota)

The total data throughput of the Sky Muster satellite pair is 135 Gbps; divided by the 400,000 expected subscribers this has lead NBN Co to enforce strict 'acceptable download policies' on this service. Data is limited to a maximum of 150GB per user per month, with only an average (across all of an ISP's customers) of 30GB of this allowance actually allowed in normal operating times (the remainder is hidden away in the hours between 1am-7am and is therefore considered utterly useless to normal people).

Contrast this to the historical download figures for fixed-line services in Australia², currently sitting at about 97GB/month, and one clearly sees that 30GB is way below the current needs of the average Australian. To put this into perspective, figure 4 shows the historical download figures as provided by the ABS and NBN Co for fixed line services. The satellite offering of 30GB/month (enforced average imposed by NBN Co in order to have some chance of minimising congestion on the service) is less than 1/3 of requirements today.

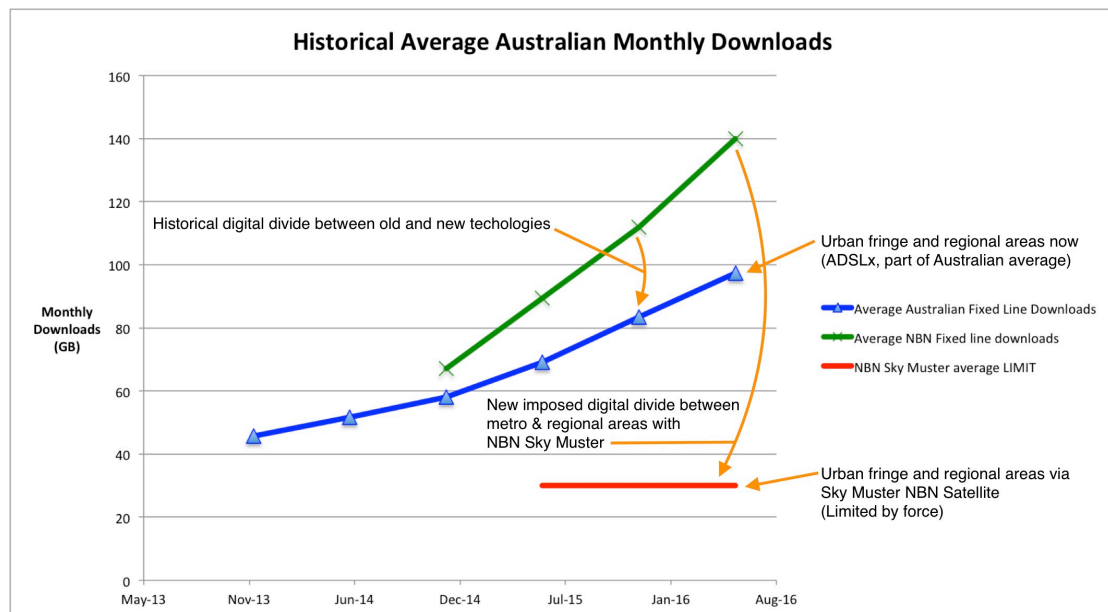


Figure 4: Historical average Australian monthly download volume compared to Sky Muster limitations.

If we then look into the future, and extrapolate data requirements by the historical value of 50% year-on-year data growth mentioned in the draft report (and as per the ABS figures) one ends up with a graph that looks like figure 5.

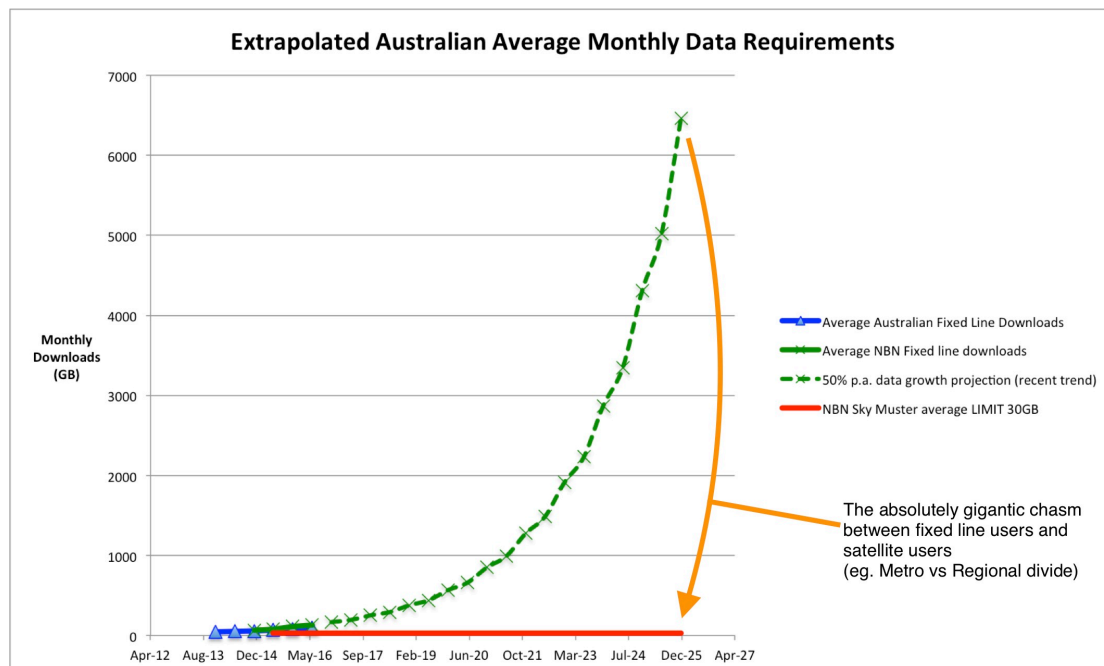


Figure 5: Extrapolated average Australian monthly download volume compared to Sky Muster limitations.

Clearly, the NBN Satellite cannot provide for current and future download capacity necessary to keep regional and remote users even just somewhat on-par with their metropolitan neighbours.

WCAG takes specific issue with the claim that education is being assisted by allowing an additional 50GB of downloads per distance education student. Not only is this measly small amount not enough for today's vast online education requirements, it is not available to students in our area who are going to normal Canberran schools. Our students are expected to keep up with the digital education requirements enforced on them at local schools (which are all in NBN fibre areas where unlimited downloads are the norm) and are therefore at a significant disadvantage to their metropolitan peers.

Latency

The unusably high latency of telephony services through the Sky Muster satellite is already addressed within the draft report. We only add to this that while the remainder of the draft report talks about the benefits of tele-health, distance education and other broadband benefits that are meant to help regional and rural Australia, it is in fact only those metropolitan network users who can actually make use of these services without facing the high delays present on the satellite service.

Reliability

We note that the draft report already mentions the rain-fade of the satellite service. We would add to this that the experience of our members (who have already trialled the NBN Satellite service) shows that drop-outs, delays in reconnection and extensive 'service downtime' is standard on the satellite. In an area not serviced by mobile reception (even though if you look at the Telstra maps you'd be led to believe that we are), the Sky Muster

connection would be our only source of connectivity to the outside world. We do not believe it to be reliable enough in situations such as frequent bush-fires to replace the current phone network.

We also take issue with the fact that NBN Co is not financially penalised if it does not meet the already far too lenient service restoration timeframes. As we argued previously, the provision of a broadband connection should be viewed as provision of an essential service, and as such non-performance should incur hefty financial penalties to ensure compliance.

Affordability

Section D of the draft report claims to show how affordable NBN Sky Muster services are. It compares the smallest 10GB per month plans and concludes that at \$34.95 per month the service represents the best value for money in the country. This is a false use of data and must be corrected:

To start with, the draft report has already noted that voice services via NBN satellite are not acceptable due to latency. It even goes so far as to suggest that Satellite users should keep their existing land-lines (if they have one) or use mobiles to augment the service for voice calls (p 175 of the draft report).

Then, on top of this, the NBN satellite customer access equipment (satellite dish & modem) consume 10x more power than the equivalent fixed-line modem/router (75W satellite modem compared to a typical 7.5W for a fibre NTD, ADSL modem etc).

The notion that 10GB is adequate data must also be questioned; while we agree that this plan is suited for voice use only, the above limitations mean the satellite will not be used for voice – and therefore if used for data would require a suitable data quantity. With all modern devices requiring near weekly updates (eg. Operating systems, applications, phone systems etc), 10GB would be enough to cater for these updates without actually having used the service for its intended purpose (eg. Business, education, social etc.). If you add another family member with additional devices, the 10GB becomes laughably inadequate. We would suggest that the minimum data requirements today are 30GB per month, but as shown above the average is already sitting near 100GB per month and is rising 50% year on year.

A fairer comparison is therefore as per Table 1.

Table 1: Voice & minimal data (monthly costs)

Service Type:	[A]	[B]	[C]	[D]
	Metropolitan NBN connection (fibre or VDSL)	Typical Regional 3 ADSL enabled Landline	Sky Muster Satellite (+ Landline for voice)	Sky Muster Satellite (+ Mobile for voice)
Data Cost (min 30GB plan)	\$44 (50GB)*	\$49 (50GB)*	\$35 (30GB – Note a 50GB plan costs \$109!)*	\$35 (30GB – Note a 50GB plan costs \$109!)*
Line Rental		\$25	\$25	
Mobile Plan				\$20
Equipment power draw	7.5W	7.5W	75W	75W
Cost of power (@ \$0.25/kWh)	\$1.35	\$1.35	\$13.50	\$13.50
Total Cost	\$45.35	\$75.35	\$73.50	\$68.50
Cost multiplier	1	1.66	1.62	1.51

* All plans based on peak data allowance as off-peak allowance on NBN Satellite is during unusable hours.

As such, this again shows the divide between metropolitan and urban fringe/regional/remote locations. While the difference for a minimal service between what we have now to what it would be with satellite changes from \$75.35 [B] down to \$68.50 [D] (if within mobile range) or \$73.50 [C] if using the more reliable land-line option, this is still more than \$20 more expensive than metropolitan minimal plans [A]. Satellite is definitely not a cheaper option.

If we compare a more typical situation (average data consumption in Australia is 97GB/month, we end up with a cost comparison similar to Table 2.

Table 2: Voice & average data (monthly costs)

Service Type:	[E]	[F]	[G]	[H]
	Metropolitan NBN connection (fibre or VDSL)	Typical Regional 3 ADSL enabled Landline	Sky Muster Satellite (+ Landline for voice)	Sky Muster Satellite (+ Mobile for voice)
Data Cost (min 100GB plan)	\$59 (Unlimited)*	\$59 (200GB)*	\$205 (70GB – Note a 100GB plan does not exist)*	\$205 (70GB – Note a 100GB plan does not exist)*
Line Rental		\$25	\$25	
Mobile Plan				\$20
Equipment power draw	7.5W	7.5W	75W	75W
Cost of power (@ \$0.25/kWh)	\$1.35	\$1.35	\$13.50	\$13.50
Total Cost	\$60.35	\$85.35	\$243.50	\$238.50
Cost multiplier	1	1.41	4.03	3.95

* All plans based on peak data allowance as off-peak allowance on NBN Satellite is during unusable hours.

Here we see that in the best case satellite + mobile scenario, monthly costs at \$238.5 [H] are nearly 4x the cost of comparable NBN metro plans at \$60.35 [E], which we need to point out represent unlimited data compared to only 70GB via satellite as more data is not available via Sky Muster due to the aforementioned technical limits. We see that the digital divide has increased from the current 1.41x cost multiplier (ADSLx) to a value of near 5.5x (if we were to linearly extrapolate the cost of data on satellite to the full required 100GB) – assuming another satellite were provided for increased data use.

As such, we cannot see how NBN Sky Muster Satellite can be considered affordable or fair for the 1,000,000 people who will be forced to use the service. The rise in costs for average use data consumption are inexcusable.

REQUIREMENTS FOR A NEW TUSO

Having pointed out that the current infrastructure plans (NBN Satellite used to serve 400,000 premises or at least 1000,000 users) represent a huge digital divide or wall built around the cities at the urban fringe that is totally unacceptable; we summarise that a strong new TUSO is required in order to force service providers to adequately and fairly service the non metro areas of the country.

A new TUSO should have the following characteristics

- Be continually updated to reflect the changing communications requirements of Australians.
- Specify bases for affordability purposes (speed down and up as well as data quantity, latency)
- Ensure average and higher users are not disadvantaged by location/service type (eg. Ensure data downloads are on-par with metropolitan expectations.
- Make telecommunications an essential service requiring accountability and compliance from providers – with financial penalties for not meeting these.

Recommended TUSO requirements

We make the following recommendations based on what we believe to be a service of acceptable quality to be defined as ‘broadband’ and with the intent of keeping the digital divide between metro areas and regional areas to a minimum.

All of the following requirements should be expressed in ratios compared to figures obtained from a typical Metro CBD area – in this way they will continually adjust (say annually) without further need for changes to the TUSO:

Table 3: New TUSO starting point:

Criteria	Value	Ratio	Comment
Minimum normal download speed (X)	25Mbps	X:Y	Ratio to customer connection speeds in the CBD)
Absolute minimum download speed	12.5Mbps	X/2	During storms or other service affecting events
Minimum normal upload speed	12.5Mbps	X/2	Decent upload speed is vital for today new uses of communications.
Absolute minimum upload speed	6.25Mbps	X/4	During storms or other service affecting events
Average data capacity (Z)	150GB	1:1	Ratio to average Australian NBN fixed line downloads. Data quota available during peak times.

Criteria	Value	Ratio	Comment
Individual minimum data capacity of premise connection point (U)	900GB	6:Z	A value to ensure regional connections can still accommodate family and business connections. Again, available during peak times.
Latency (between users)	<300ms		All real-time services (VOIP, Skype, Facetime etc) should be able to be used irrespective of connection location or connection type.
Reliability	99.9%		~45min outage per month
Minimum data quantity for pricing purpose (W)	30GB	Z/5	Ratio to average data downloads used as a baseline to price minimum cost service.
Pricing at minimum [W] of data including voice service	\$44	1:1	Ratio to minimum costs available on the NBN fixed line connections
Cost of data 0 to Z GB	\$xx	1:1	Cost of data up to the average Australian download quantity should cost no more than receiving this data within the CBD footprint (at similar speeds).
Cost of data Z to U	\$xx	1.1:1	Cost of data up to the data capacity of the connection point should not cost more than 10% more than comparable data in the CBD.
No premise shall have a connection of less than TUSO standards.			To avoid networks with service 99% of users with the area, and leave out the other 1% to fend for themselves.
If an area is not actually remote, it shall NOT be serviced by satellite.			
If an area is on average not serviced by satellite, no premise within it shall be served by satellite			To avoid the disastrous 'single house/street on satellite' issues currently occurring within the fixed line and fixed wireless NBN rollout.

All of these initial values will move up over time as the communications connections within the CBD are improved – a process that appears to work well in such a competitive environment, but which falls short without a matching TUSO in urban fringes, regional and remote areas).

HOW TO IMPLEMENT A TUSO

We support the notion of competition to bring the affordable, reliable and fit-for-purpose essential service of communications to all areas of the country. As such, we would recommend that all areas (based on existing Telstra Exchange area) deemed not to comply with the new TUSO to be put onto a government run Tender pricing exchange.

- Any company can bid to provide TUSO services to these areas for a period of time (not more than 7 years) – the contract period – to ensure TUSO contract is updated to meet new TUSO requirements at regular intervals and no area is left in squalor as the rest of the countries communications moves ahead.
- TUSO tenders are for offers of certain \$/premise of cross-subsidy p.a over the fixed contract period. Lowest cost wins.
- At the end of the contract period, the area is evaluated against the TUSO requirements in force at that point in time. If the area still complies, the contract is automatically extended for a further TUSO contract period (only 2x extensions allowed). If the area no longer complies or if three contract periods are up, the area is again put onto the government run tender exchange. Any company may then bid to take over this area.

In this way, investments in long-lasting technologies can be supported, while the cross-subsidies are kept to a minimum. More temporary solutions (eg. Wireless, reuse of existing copper) can be undertaken by smaller companies in the short-term, offering value for money upfront, but are also encouraged to plan for the future of their connected users in order to keep the contracts.

So for example; a smaller fixed wireless provider may be able to bid low for a couple of serving areas now. This keeps the upfront costs low now. Because this company will be wanting to keep the area into the future contract periods, they may decide to slowly (over the course of one or two further contract periods) start to roll out fibre infrastructure (or upgrade to better wireless equipment).

Further, with a new TUSO such as our recommended minimums listed above, this would force NBN Co or other infrastructure providers to actually implement proper communications infrastructure for the urban fringe and regional areas. By moving our areas onto fit-for-purpose communications infrastructure (fixed wireless or fixed-line), this would free up Sky Muster NBN satellite capacity to allow TUSO compliant (with exception of latency) to the remaining 40-50,000 premises that are truly remote. The digital divide would be minimised and all Australians will benefit from decent communication systems.

INTERIM MEASURES

It is absolutely vital that in the interim period (until a new TUSO is implemented) that premises continue to be served with the communications infrastructure that they have. This means that as a bare minimum, the provision of ADSLx must be added to the mandatory requirements of Telstra and other ADSLx providers in order to ensure they continue to service, maintain and improve their equipment until such time as any new TUSO compliant service becomes available.

WCAG is specifically concerned about the possibility (without interim TUSO updates) of our existing ADSLx services becoming un-serviced simply because the area has been marked as 'ready-for-service' with Sky Muster Satellite NBN – a completely inferior and expensive communications option compared to the ADSL we already have.

CONCLUSION

WCAG supports a strong new TUSO and is of the firm opinion that without one the digital divide and data droughts experienced in areas that are not metropolitan will continue to grow, causing economic and social harm to people who are not living within the central parts of the cities.

Broadband communications provision to new TUSO requirements should see the service classed as an 'essential utility service', much like power and water is today – with similar strict incentives to keep the service operational under all circumstances.

The defining broadband TUSO requirements shall be on a moving scale; requirements being fixed as ratios to CBD values, such that when the CBD services are improved (as they inevitably are), the TUSO services are equally improved to keep up with exponentially growing communications requirements.

We firmly believe that the current Sky Muster NBN satellite is not fit for purpose under any of the criteria for adequate broadband provisions including speed, data caps, latency, reliability and affordability, but that it could be fixed via the provision of a new TUSO which would see the majority of current Sky Muster serviced areas (those within existing fixed line copper network areas) shifted to more suitable fixed-line or fixed-wireless connections – freeing up capacity of the satellites to providing decent broadband for the truly remote Australians.

REFERENCES

-
- ¹ *NBN Corporate Plan 2011-2013*, available from:
<http://www.nbnco.com.au/content/dam/nbnco/documents/nbn-co-3-year-gbe-corporate-plan-final-17-dec-10.pdf>
- IP Carrier - Internet speeds have grown 10x every 5 years*, available from:
<https://ipcarrier.blogspot.com.au/2013/05/internet-speeds-have-grown-10x-every-5.html>
- ² *Australian Bureau of Statistics, 8153.0 - Internet Activity, Australia*, June 2016, available from:
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/8153.0Main%20Features4June%202016?opendocument&tabname=Summary&prodno=8153.0&issue=June%202016&num=&view=>
- NBN users download more data per month than national average*, available from:
<http://www.zdnet.com/article/nbn-users-download-more-data-per-month-than-national-average/>