SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

Public Inquiry

A SUBMISSION ON BEHALF OF THE FTTH COUNCIL ASIA-PACIFIC

3RD JULY, 2009

About the FTTH Council Asia-Pacific

Founded in October 2004 and registered as a not for profit organisation in March 2005 in Singapore, the **Fibre-to-the-Home Council Asia Pacific** mission is to educate, promote and accelerate FTTH and resulting economic and quality-of-life enhancements this technology brings to society.

Who are we?

FTTH Council Asia Pacific members represent all areas of broadband industries, including telecommunications, computing, networking, system integration, engineering and content-provider companies, as well as traditional telecommunications service providers, utilities and municipalities.

Our members are located throughout the Asia-Pacific region and are experienced with many different FTTH deployments.

Details of our member organisations are available from the Council's web site by taking the 'Membership' > 'Member Companies' link. Details of the Council's organisational structure and office holders are also available on our web site under the 'About Us' link.

What does this mean?

Members have a forum to apply critical thinking to FTTH technologies and applications. Using our member's inputs, we keep the organization informed about industry trends, share success stories, and provide quality speakers through our speaker's bureau.

We offer members an opportunity to network and collaborate while providing consistent information on FTTH from industry experts to members, consumers, media, analysts and governments.

The Council operates with a Board of Directors and functional committees covering the disciplines involved with most aspects of FTTH.

What do we do?

The FTTH Council Asia Pacific endeavours

- to provide architecture and vendor-neutral advice and information to governments and other bodies,
- to guide and encourage FTTH deployment and
- to help assure FTTH becomes a regional reality.

The Council's comments necessarily do not reflect the views of any single organisation and in its mission to promote FTTH, the Council approaches FTTH architectures and solutions with absolute neutrality. In this context, we herewith submit this response to the Senate Select Committee On The National Broadband Network - Public Inquiry.

www.FTTHcouncilAP.org

Introduction

The FTTH Council Asia-Pacific has been pleased to submit recent responses to the Australian Government's "*Regulatory Reform For 21st Century Broadband*" and "*Fibre To The Premises In Greenfield Estates*" calls for public comment. In addressing the Senate Select Committee's discussion points outlined in its terms of reference document, we refer and further develop our earlier submissions rather than to unnecessarily duplicate their content.

We ask that this submission be read alongside our earlier work. The earlier submissions are attached as appendices to this paper.

Should we call it FTTH or FTTP?

The three FTTH Councils (Asia-Pacific, Europe and North America) recognise that the terminology we have chosen for our name, the *Fibre To The* ***Home*** *Council*, might convey an unintended implication that we are only concerned with residential fibre deployments. This is not the case. Especially in the context of our work with governments and regulators, the FTTH Councils' motivation is to promote and accelerate fibre deployments to homes, businesses, public institutions, government organisations and even to infrastructure such as traffic lights, signs and mobile base stations.

The Australian government's choice of the term FTTP (Fibre To The Premises) better suits the aspirations and requirements of the National Broadband Network proposal. In this response, the Council endorses the use of the term FTTP and we have endeavoured to take it on board.

It can be assumed that any reference we make to FTTH means FTTP. Our use of the term FTTH has never been intended to imply that the fibre architecture is best suited for homes alone. Fibre is unequivocally the preferred broadband architecture for all kinds of premises, regardless of their purpose.

Australia's long term broadband requirements encompass much more than just a need for faster Internet or better coverage

In our view, none of Australia's past broadband initiatives and policies have approached broadband issues from the holistic perspective which we believe necessary. In general, our main concern with these earlier initiatives is that they each over emphasised one aspect of the several we consider to be simultaneously essential. For example, some earlier programmes primarily aimed to deliver higher rate Internet access (such as the abandoned FTTN initiative) and others aimed to expand the availability of Internet access to a larger proportion of Australians (eg the abandoned OPEL initiative and the various access blackspot initiatives). Individually, these primary objectives are commendable, but on their own, they fall short of what we believe to be ultimately required by the nation.

The *21st Century Broadband – National Broadband Network* policy however sets a new direction. It aims to increase speed, coverage and provide wholesale open access. It suggests the network needs to support multiple applications and provides firmer technical detail than seen previously. The Council has enthusiastically welcomed the initiative but believes the programme and policy can still be improved. We responded to the earlier regulatory and green fields discussion papers in the hope that our comments and concerns will help focus and develop the policy further.

To understand one manner in which policy can be improved, we think its important to consider the possibilities that are created by technological and applications evolution,

which have been progressing and will continue to do so. We therefore believe the true promise of next generation access lies in its transformative potential. Not only do access speeds and national coverage issues need to be considered together, they should be addressed within the even broader context of new applications and industry convergence and transformation.

We expect the impact of an FTTP NBN to be profoundly positive and that even though we can only guess about what the future may hold, the FTTP NBN's long term benefits will be enjoyed by generations of Australians to come.

The FTTH Council urges that all national broadband policies be primarily built upon a foundation clearly articulating specific and important national outcomes. For example:

- reducing human society's long term environmental impacts,
- increasing the efficiency of national energy consumption,
- improving health outcomes,
- reducing the cost of delivering health services,
- drawing in marginalised and isolated communities,
- improving the availability of education opportunities for all Australians,
- delivering the means for Australians to balance their work / professional lives and thereby promoting secondary benefits such as reducing waiting times for child care placements and assisting Australia's carers,
- maintaining international ICT competitiveness, promoting Australian ICT research and exports,
- increasing Australia's GDP through higher productivity and the establishment of new knowledge industry opportunities,
- and so on.

With such objectives at front of mind, the key stakeholders can be identified. It should be apparent that the key stakeholders lie, predominantly, beyond the bounds of what are considered to be today's telecommunications and Internet Access industries.

We think that the best means for deriving the tangible national benefits listed above is to promote and enable a vibrant, innovative, competitive and viable applications industry. To this end, we specifically draw attention to our call to consider a 'new connectivity model', outlined on pages 11 to 15 of our "*Regulatory Reform For 21st Century Broadband*" response.

In the context of our views on NBN connectivity, the Council wholeheartedly encourages the government to engage with representatives from all of the stakeholder industries. As future applications providers on the NBN, their requirements should be understood and accommodated:

- in regulation and legislation,
- within telecommunications, media, trade, environmental, social, health and education policies,
- by the NBN Co and its design of the NBN, and
- by the transformed telecommunications industry.

Figure 1 - Research by the FTTH Council North America suggests availability of FTTH changes working and commuting patterns

It is certain that FTTP technology can support superior broadband delivery compared against any other technology. Without a holistic approach however, the project risks propagating today's Internet Access market structure and competition model. We know that FTTP is capable of delivering far more than faster Internet and consider it important that all involved with the NBN understand that its success depends on more than consideration of speed and coverage alone.

To extract best outcomes from initiatives, governments should not only promote FTTP's deployment as a higher speed emulation of today's market and services, they should vigorously seek and promote the many new opportunities that FTTP can enable.

The public discussion seems to be all about FTTP. Let's not forget the transition and the role of other technologies.

Australia's fixed twisted pair network has rolled out over the past century and covers more than 90% of premises today. If a premises can be connected with a copper cable, it is technically likely to be able to be connected with optical fibre cable too. But it's taken over a century to get to where we are today with Australia's twisted pair and coaxial cable infrastructure and whilst there's no reason to believe a transition to FTTP will be quite so protracted, it nevertheless stands to reason that Australia's transition to FTTP will take time. Reaching 90% coverage in eight years can be achieved with appropriate focus and resolve, and ultimately, we believe fibre will reach even more of the population.

All Australians deserve access to the kinds of applications that fibre technologies best support, including Australians not yet connected to fibre. It would be irrational and counter productive to abandon or delay plans to deploy FTTP on grounds that not all Australians can be connected on day one.

The roll out should progress as quickly as feasible. The developers of the kinds of applications best suited to fibre and which will deliver the important national outcomes mentioned above will likely be discouraged if the progress of the fibre roll out doesn't achieve significant FTTP coverage in a reasonable timeframe.

The FTTH Council therefore welcomes the policy recognition that fibre will need to stand alongside wireless and satellite technologies. It's also important not to forget the part that DSL / twisted pair and coaxial cable access will play alongside FTTP during the transition.

Its not just about the access network either

In its policy announcement and subsequent communications, the government has articulated the requirement of the FTTP NBN to be capable of delivering services of at least 100 Mbit/s and of at least 12 Mbit/s wirelessly. The FTTH Council endorses this vision and comments that many of the applications that can be envisaged will rely on much higher capacities than commonly available to most Australian consumers today[1].

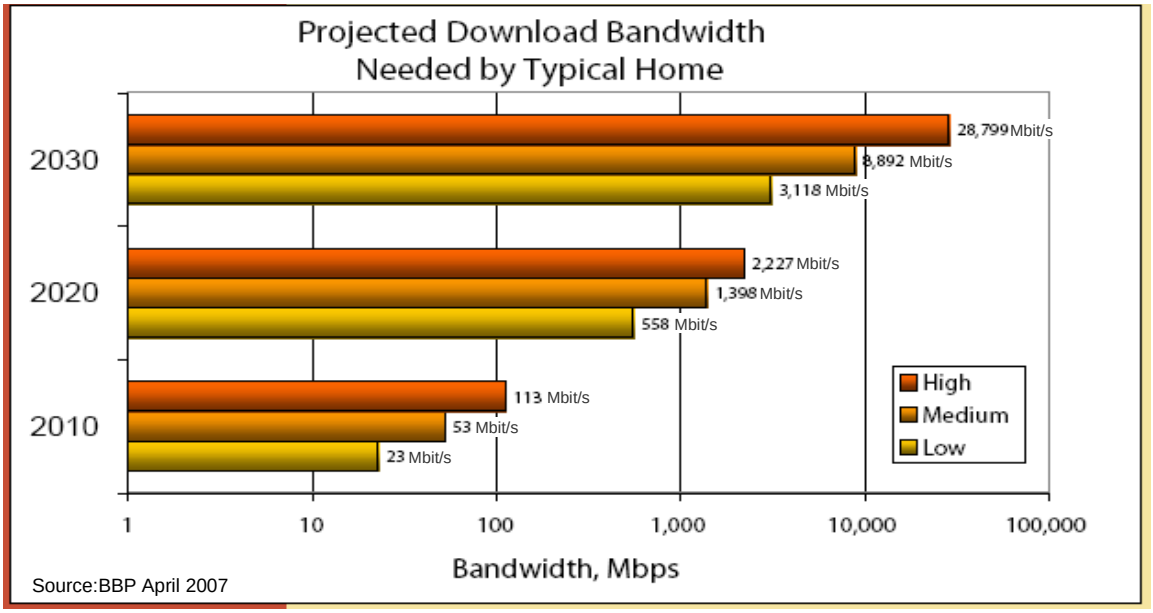

Figure 2 – Although actual numbers are open for discussion, there can be no doubt that demand for substantially faster residential broadband will continue to grow in the coming decades

When one considers that several such applications could be called upon to be used simultaneously, it's easy to understand the need for substantially greater broadband capacities than today's networks can provide. The Council encourages everybody to think about access rates substantially greater than 100 Mbit/s in the future – because surely society's needs will continue to grow for the foreseeable future as they have so dramatically done in the recent past (refer also to Figure 6 and our response to 2i).

[1] We note that virtually no Australian consumers have access to an ADSL2+ service that operates at 24 Mbit/s, or experience wireless services that operate at 21 Mbit/s. Practically, if they chose to subscribe to the 'fastest' service available to them, many would at best experience peak performance at just a quarter or even less than a quarter of these rates. This reality seems too frequently to be forgotten or unrecognised.

The great thing about fibre access technologies compared with traditional broadband access is that reliable and dependable per consumer throughput of 1,000 Mbit/s and beyond is technically achievable *today*, even if Australia's immediate broadband needs are more modest. An investment in FTTP enables this evolution path. Investments in alternate broadband access technologies do not.

However it's not just about access speeds. Broadband traffic from consumers and businesses needs to be aggregated and backhauled vast distances so it's important that backhaul capacities are similarly boosted when Australia makes its transition to FTTP.

The NBN dimensioning decisions should not only be based on the access portion, but also upon the backhaul. At this stage, other than an intention that backhaul capacity and availability be addressed as part of the overall NBN project and initially in some specific locations, little *technical* detail has been revealed about the government's backhaul plans.

- What general principles will be used to determine where new backhaul will be built and by whom?
- Where will new capacity be created, and how much capacity?
- What technical capabilities will be provided to manage prioritised or marked traffic so that the most important information continues to get through, even if the backhaul network is operating in a degraded capacity?
- What resilience and redundancy capabilities will be built into the NBN's backhaul routes? What decision making process will be applied to determine whether one, two, three or more redundant backup paths should be provided – and what principles will be applied to best determine the choice of their individual capacities?
- Where will the Points Of Interconnection be located? Will access seekers be permitted to negotiate interconnection closer to NBN consumers than the initially designated Points Of Interconnection?
- There is more than one kind of 'backhaul'. What 'backhaul' will be provided by the NBN Co between consumers and the NBN's Points Of Interconnection and what alternate 'backhaul' will be required separately by each access seeker, presumably upon commercial terms? What different governance and competition arrangements or regulations will be imposed on these different kinds of 'backhaul?

The behaviour of future NBN services will be constrained or expanded depending upon the capability of backhaul and its dimensioning and management. These are technical decisions that up until now in today's industry have been founded upon business imperatives. Because the NBN Co must incorporate at least some backhaul capabilities within itself, today's private backhaul investment decisions are being impacted because some of the important NBN policy details are yet to be revealed. The Council encourages these details to be revealed as quickly and efficiently as possible, so that the corporations that the government expects will become access seekers or complementary infrastructure providers can make and implement their own necessary plans.

Response to specific terms of reference questions

2a. Any economic and cost/benefit analysis underpinning the NBN

The FTTH Council Asia Pacific comprises many expert member organisations. Our members have accumulated experience in the deployment of FTTP technologies and platforms across the Asia Pacific region and throughout the rest of the world. Our members have worked with all kinds of FTTP investors to develop and refine business cases, but the Council itself has never been engaged to develop a business case or to conduct an economic cost / benefit analysis. The Council therefore cannot comment itself on these matters.

At the FTTH Council's recent annual conference in Melbourne in May 2009, the Assistant Chief Executive of Singapore's Infocommunications Development Authority (IDA) mentioned that an economic impact study undertaken by the IDA indicated that FTTH would boost Singapore's annual GDP by 1.5%.

At the February 2008 FTTH Council conference in Paris, Ms Christine Lagarde, French Minister of Economy, Finance and Employment said "*This Virtual Revolution [FTTP deployment] is not only a Cultural Revolution, it is also an Economic Revolution, which concerns me first and foremost, as Minister for the Economy, Finance and Employment. The new information and communication technologies indeed represent a potential, for France, which has been assessed at more than half a point of growth*".

Martin de Mijolla, the Chief Information Officer Conseil général des Hauts-de-Seine (Paris) went on to say that "*[FTTP] development is necessary to sustain the attractiveness and competitiveness of the territory*", clarifying that the roll out needed to be completed within a six year timeframe to encourage developers of services.

If Australia's FTTP programme achieves outcomes similar to those predicted for Singapore or France, it would approximately translate to an additional $A5-15B GDP annually. The FTTH Council considers this rate of return well worth an investment of up to $A43B.

On April 16th 2009, Hiroyuki Hishinuma, Director for New Competition Policy, Telecommunications Policy Division of the Japanese Ministry of Internal Affairs and Communications (MIC) said "*the ICT industry leads approximately 40% of the real GDP growth [in Japan]*" (quoting the MIC's 2008 white paper on Information and Communications in Japan) and that "*ICT policy is important especially in such a situation as the current economic crisis. Broadband is the vital infrastructure for ICT activities.*"

The FTTH Council too believes that ICT led growth can make a substantial ongoing contribution towards Australia's long term GDP growth.

There are several Australian investors already experienced with FTTP deployment and with the Australian network. We encourage the Senate Select Committee to solicit their views.[2]

[2] The following link searches a Google database for FTTH deployments around the world. http://maps.google.com.au/maps?q=FTTH%20deployment%20map Zoom into Australia by dragging the map and using the mouse wheel. After zooming, allow a little time for the application to search and display FTTH communities. NOTE: We know this database to be inaccurate. In any case, it is a very useful reference.

However we caution the Senate Select Committee to interpret FTTP business case details with care. The capabilities of fibre far exceed the capabilities of traditional broadband access technologies and it would be inappropriate to determine notional costs and benefits of a national fibre roll out if the benefits of new and as yet unanticipated applications are arbitrarily excluded from the calculation.

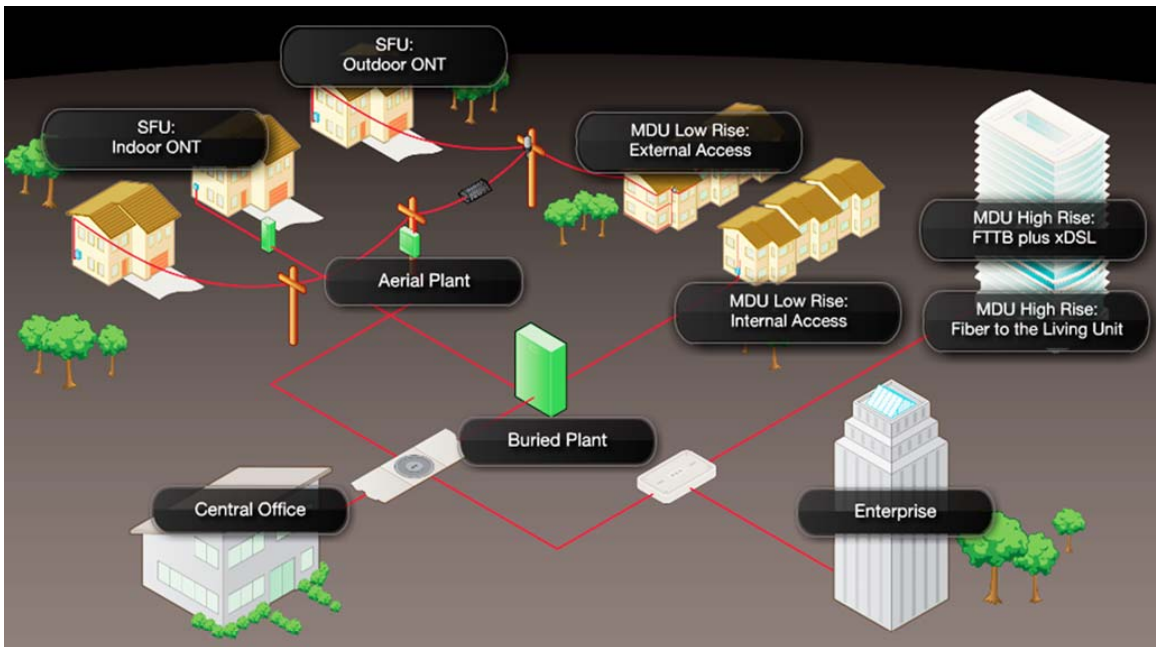

Figure 3 - Australian enterprises are already experienced deploying aerial and underground fibre

Australia is a vast continent with many different communities and a vast social and geographic tapestry. Such diversity will inspire many deployment options. Costs and benefits, as best can be determined, will vary from place to place. This means that comparison between superficial FTTP business cases could be misleading, especially if undertaken without due care and expert understanding of the technology and deployment practicalities. It will be hard to compare and contrast different proposals without informed knowledge of the assumptions underpinning each.

FTTH Council's Greenfields submission	p4	When comparing business cases, *all* characteristics of the different alternatives should be studied in order to form a holistic and fair comparison. Specifically, the value of national outcome benefits (including those listed on page 4 of this Senate Inquiry submission) need to be factored in. Refer to Recommendation 4.

To optimise a business case, attention should be directed to the most significant components first. Perhaps the most significant lesson that should be recognised from overseas experiences is that the predominant cost component of a major FTTP business case is expenditure on labour and capital works, which in tough economic times should also be factored as a national benefit. A secondary significant cost is that of ongoing network operations. Special attention should be devoted to these areas in particular. Longer term environmental costs should also be considered.

It is the Council's experience that each country deploying FTTP will face unique issues, due to differences in geography, common design practices, industry structures and the training and experience of the workforce. Early deployment costs rarely reflect the dividends of experience because careful monitoring of deployment practices, analysing

results and rapidly improving inefficient processes can lead to significant immediate and subsequently long term efficiencies.

In our earlier submissions, we have recommended that the government finds ways of harnessing the FTTP deployment experiences that Australia's fledgling FTTP investors have already gained and we think this will allow the roll out to commence on better footing.

The basis for comparing different access technology options

The Australian deployment of FTTP will ideally adapt as it progresses to leverage the evolving optimal blend of technology options – during the initial eight year deployment period and beyond. The Council particularly anticipates innovation and robust discussion concerning the best and most effective ways of harnessing rights of way and effectively utilising all available fibre spectrum (including RF spectrum), both of which should be approached from the perspective of considering them to be common community resources in the new national build.

Different technology approaches provide different levels of 'headroom' for growth, and therefore support different practical investment timescales. We think there are some important trends that can help distinguish between different access technology options.

In our view, investments in wireless broadband technologies, which can be regarded as a limited broadband access option in medium to high living densities where many consumers simultaneously share limited capacity[3], provide the lowest degree of capacity headroom and should be practically recognised to be three to six year investment propositions. An examination of the history of wireless technology lifecycles adds weight to this view. We find no reason to believe the wireless technology trends exhibited in the past will be fundamentally different in the future.

In relation to fixed networks, we believe investments in cable plant should be evaluated independently from investments in the equipment which uses the plant.

The active equipment which supports the FTTN and coaxial cable broadband architectures can provide greater capacity headroom than wireless and should normally be evaluated on a five to ten year basis. Conversely, active equipment to support FTTP architectures, having the longest investment horizon, can provide substantially greater capability again and would more likely be considered on ten to twenty year timescales.

The life of the fibre infrastructure (as opposed to the active equipment connected to the fibre infrastructure) should be much longer again.

We note that by far the largest components of a national access fibre investment lie in the capital works programme deploying fibre cables and connecting consumer premises to the network – that is, the investment in the deployment of cables and lead-ins substantially exceeds the investment in the equipment that connects to the cables. Additionally for underground deployments, investment is required to establish new duct pathways where

[3] Generally and particularly in medium to high living density areas such as urban and suburban contexts, well engineered wireless broadband deployments are dimensioned to sustain significantly lower simultaneous per-user average throughput than well engineered fixed broadband deployments. Where the subscriber base is much thinner such as for rural and remote wireless deployments, *and if dimensioned and managed as a fixed broadband access alternative* (which is often not the case), wireless can provide a more practical alternative to fixed technologies.

existing pathways do not already exist [4]. Assuming access cables and ducts are dimensioned and deployed correctly, these would most appropriately be considered to provide very long lives[5].

Fibre technologies are continuing to evolve. Should we wait?

For the past two or more decades, narrowband and subsequently broadband equipment technologies have been rapidly evolving. The record of history demonstrates that practically, market requirements grow continuously (as shown in Figure 6) and equipment technologies require ongoing upgrade to meet new demand.

We believe it to be inappropriate for any operator or government to try to rationalise a decision to defer any kind of broadband upgrade on the basis that 'new technologies are just around the corner'. Newer technologies will *always* be just around the corner. If an investment that's needed today gets deferred by a year or two, that's another year or two that the national benefits that would have otherwise been available will be delayed.

FTTH Council's Regulatory Reform submission	p23	Although today's fixed access is predominantly based on twisted pair and coaxial cable technologies, fibre based access is already unquestionably more capable. To the Council, it is unthinkable to imagine Australia effectively maintaining its international competitiveness and position without a national transition towards FTTP. The need for a transition to fibre is inevitable and necessary. When the transition commences, it should proceed as quickly and efficiently as possible, to minimise the risk and cost of prolonged digital and applications divides. It is inevitable that fibre will ultimately become Australia's sole fixed access technology. The Council believes that a clear policy recognition of this inevitability would help focus appropriate rigor towards the engineering and deployment of Australia's National Broadband Network.

2b. The ownership, governance and operating arrangements of the NBN company and any NBN related entities

The construction of Australian FTTP communities has been progressing for several years and will accelerate following enactment of the government's proposal to mandate FTTP in greenfields from 1st July 2010. From the outset , the NBN Co will therefore be required to integrate a conglomeration of smaller FTTP deployments into a national network.

Up until now, the construction organisations deploying FTTP have proceeded independently. Depending upon the government's intentions for the operation of the NBN

[4] The Council actively promotes and encourages the reuse of existing rights of way where possible, especially pre-existing underground ducts and overhead cable rights of way. Reusing existing facilities can substantially benefit the business case for deployment, and dramatically reduce the burdens of inconvenience borne by the community during deployment.

[5] Backhaul may need to be augmented more frequently due to ongoing growth in demand for more capacity.

Co and the deployment of FTTP in Australia, this independence will continue for at least some time to come, perhaps for the long term.

Those that have already been deploying FTTP are unlikely ever to have been 'challenged' to justify their architectural and technology choices. Individually, they are likely to consider themselves experts in the deployment of FTTP in their respective communities of engagement and the Council acknowledges this experience. However, we see a strong need for the NBN Co to bring all parties together, as quickly and efficiently as possible, so that sufficient uniformity can be brought to bear upon the ongoing national roll out. Closer alignment between organisations engaged in the deployment of FTTP will facilitate better sharing of information so as to learn from and apply experiences to improve deployment practices throughout the national build. It will facilitate imposing a degree of uniformity to infrastructure records (for example of the cable pathway assets) allowing long term operations, maintenance and evolution efficiencies.

In bringing together existing FTTP communities and other existing infrastructure, we expect parties to compete amongst themselves to put the best proposals forward to vend their particular assets into the NBN Co. They will negotiate on the basis of achieving the best outcomes for their shareholders which may or may not be in line with what is best for the nation. We are concerned that at least in some cases, two or more potential contributors to the NBN Co will compete with each other to vend similar assets into the pool in the same communities. The issue of duplication in today's network means that it doesn't necessarily follow that every asset of every organisation should be transferred into the NBN. That there will be winners and losers has implications for ongoing NBN collaboration.

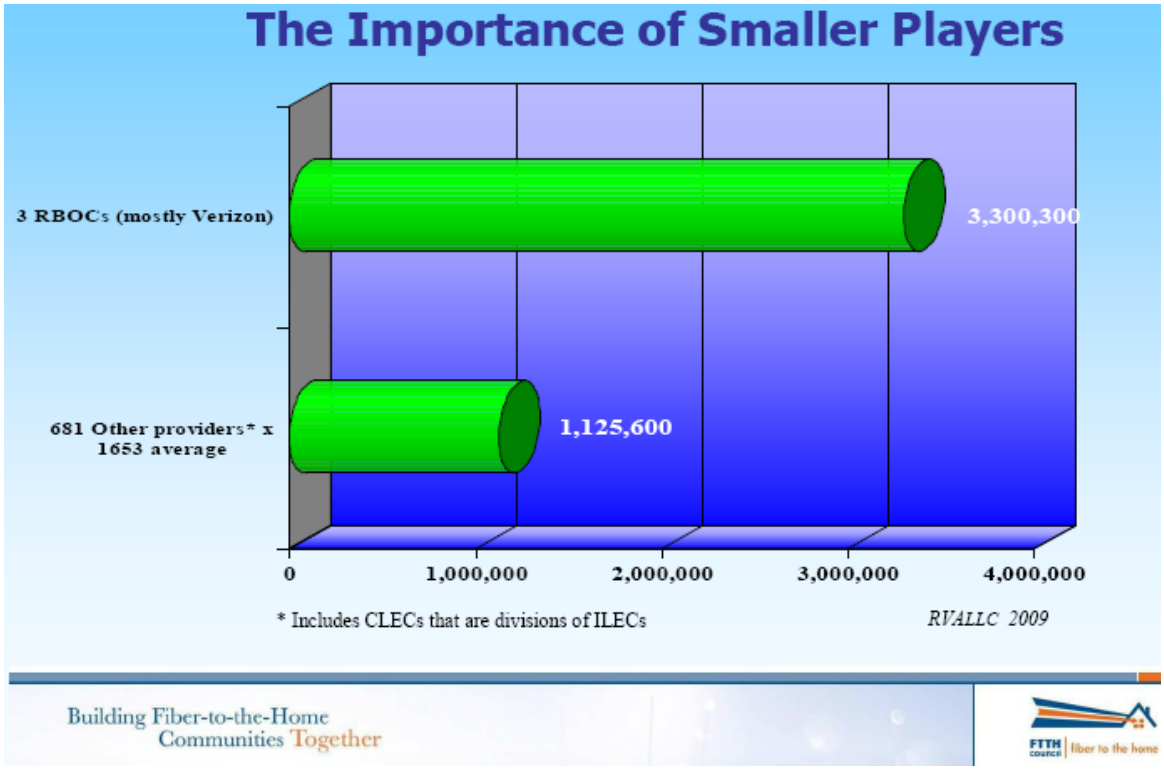

Figure 4 - The current deployment of FTTH in North America is more mature than in Australia and the importance of smaller players towards the overall FTTH picture is very clear.

The FTTH Council has seen from its Asia-Pacific experiences that collaboration, in addition to competition between players, is a critical factor for success. In the competition to vend similar assets into the NBN Co, we are concerned that the goodwill of all parties

needs to be maintained, that all parties need to be treated fairly, and that the Australian taxpayer receives good value for their investment.

We urge that sufficient thought be directed towards managing this process carefully from the outset. If insufficient care is taken to establish clear expectations and processes at the outset, ensuring a high degree of certainty about legislative, regulatory and commercial outcomes, the industry disunity which has plagued Australian telecommunications in the past may resurface under a new guise.

The Council doesn't have a complete suggestion as to the organisation and management structure for the NBN Co. It is however clear that the adopted governance structure should reinforce the principles of

- Open Access
- any to any connectivity
- fair enforcement of the agreed aggregate traffic policies at the NBN Points Of Interconnection - to assure contracted service quality is simultaneously achieved for all access seekers.

We note that further articulation is still required to make clear what Open Access in the context of the FTTP NBN will practically mean.

Our Asia-Pacific and international FTTP deployment experiences encourage us to suggest a some core principles to guide the development of NBN Co organisational and governance arrangements. The NBN Co will require:

1. a strong, competent and experienced core team of technical experts, to enable the NBN Co to identify and focus on the core issues at hand, to guide the technology, architectural and design choices, to develop deployment processes and to optimise them, to develop standards for and manage the integration of the nation's various FTTP deployments into consolidated and consistent Points Of Interconnection;
2. a dedicated training and compliance arm, to provide assistance to all levels of the industry and local government, to assure the competent and consistent design, installation and maintenance of the national network, independent of state and local government boundaries;
3. a sophisticated network and operations function, designed to assure reliable and resilient operations and management of the NBN across the entire nation in a coordinated manner, especially when the network is threatened or compromised because of natural disasters or national emergencies.

The challenges of structuring and managing a national telecommunications access wholesaler across different geographic regions will be complex. The individual requirements of and differences between urban, suburban, regional, rural and isolated communities need to be accommodated by the NBN Co organisational and operational structure. Ongoing maintenance and operations will dictate either that the NBN Co itself must have local presence across the nation, or that it will need to work collaboratively with appropriately trained and inducted local agents.

Given its presumed scale and scope, we encourage the government to solicit expert opinion from those experienced with the development of organisational and governance structures. Australia's NBN Co will have uniquely Australian requirements and we feel it important to develop the right Australian approach towards its organisation and governance.

2c. Any use of bonds to fund the NBN

The Council has no objection to the use of bonds to fund the National Broadband Network.

We believe the identification of and pursuit of particular funding options should be at the prerogative of the NBN Co, as guided by policy imperatives.

2d. Any regulations or legislation pertaining to the NBN

FTTH Council's Regulatory Reform submission	p4	We strongly commended the initiative to review regulation. The dramatically faster pace of change of technology, applications, industry relationships and structures compared with Australia's Telecommunications and media legislation has rendered existing legislation ineffective and outdated.

We urge more frequent review and amendment of telecommunications, media and related ICT regulation and legislation.

Reviews should examine legislation, regulation and delegated instruments and their ongoing effectiveness to keep pace with technological and industry change. They should address effectiveness of promoting and ensuring the realisation of national objectives and outcomes.

We suggest comprehensive reviews of all legislation and regulations pertaining to *all aspects* of the Digital Economy and its underlying infrastructure be scheduled at least once every five years for the foreseeable future. Reviews should particularly recognise technological and industry changes to ensure the operation of legislation and regulation supports, rather than impedes, continuous progress.

FTTH Council's Regulatory Reform submission	pp 17-19	The 'Long Term Interests of End Users', as currently defined by s152AB of the *Trade Practices Act 1974* (Cth), might inappropriately constrain the realisation of many of the benefits we believe FTTP technologies to be capable of delivering. As we outline in Recommendation 8, the benefits of an NBN investment extend beyond direct economic concepts and should be recognised in the Act.
	pp 20-21	We support the principle of industry self regulation, but the existing process has demonstrated some areas of concern. The process of self regulation is ad-hoc and disconnected from policy processes. It should be closely scrutinised and reviewed carefully to ensure ongoing self regulation processes are guided by and assist with the implementation of government policy. Refer to Recommendation 10. Sometimes, industry might fail to develop or maintain codes effectively. The self regulation process should be improved to deal with situations where industry fails to reach agreement, or works contrary to the implementation of public policy. Refer to Recommendation 11.

2e. The availability, price, level of innovation and service characteristics of broadband products presently available, the extent to which those services are delivered by established and emerging providers, and the prospects for future improvements in broadband infrastructure and services (including through private investment)

If the NBN or any other broadband initiative proceeds solely on the basis of a perceived need to support *conventional* services and applications in the *conventional* manner, the nation's and the industry's future will assuredly be *conventional*. This is not an outcome we aspire to. We therefore welcome the Senate Select Committee's desire to look towards future improvements in broadband infrastructure and services and to specifically address innovation at all layers.

The Council has been concerned about the degree of public focus currently directed towards the existing broadband application of High Speed Internet Access. We consider that Internet on its own, including the kinds of application delivered over the top of the Internet, inadequately reflect the potential of an FTTP investment. Today's Internet is certainly exciting, but we urge the Senate Select Committee and all Australians to look well beyond it to understand the true value of broadband and fibre. If the nation is to embark upon an investment for the future, future services and characteristics should be the primary focus of inquiry.

SmartGrids, eHealth, eSecurity, eEducation and conferencing applications have been identified as important potential benefits of the NBN. We strongly agree in their importance and don't think any of these applications can be adequately implemented over the Internet. We're also concerned that these applications are yet to seriously emerge on today's broadband networks, or if they are emerging, it's only in the narrowest of contexts. We presume that today's typical Internet access services don't adequately support the technical characteristics required to underpin some of these applications, nor the commercial characteristics required to meet the needs of some applications developers. Without change, it doesn't appear that these important applications will emerge of their own accord through private investment means alone.

We urge the government to take active steps to promote these applications, and bring the stakeholders that will develop and benefit from them together to work out the important network and commercial requirements that will permit them to flourish.

FTTH Council's Regulatory Reform submission	pp 11-14	We think today's Internet connectivity model inhibits the development of certain kinds of valuable and nationally important application. This is a key reason these kinds of application haven't yet emerged on today's networks. If the NBN and its competition framework is optimised to propagate today's kind of Internet access services, it will surely underachieve its transformative potential. New applications may not emerge on an inappropriately conceived NBN either.

	pp 25-27	In order to effectively promote innovative applications that benefit consumers, and which encourage the emergence of new applications from outside the traditional telecommunications industry, it is important to look beyond the needs of today's ISPs, operators, vendors – all of whom have built businesses upon today's networks. Tomorrow's needs and tomorrow's industry players may be different than today's. It does not necessarily follow that tomorrow's environment should be modelled upon today's. Refer to Recommendation 18.
		There is a tangible threat that 'applications divides' (innovative applications being available to some communities but not others) might emerge if application providers cannot easily 'go national' with their innovative services. Applications divides could similarly emerge if innovative services are not nationally embraced by government and national applications providers, to assure critical mass. We call for and support uniformity in the technical approach to network interconnection to minimise barriers applications providers could otherwise face in expanding their footprints.
FTTH Council's Greenfields submission	p6	The Council believes that regardless of country or policy driver, it would be a fundamental error to attempt to evaluate and compare a FTTP proposal only on the basis of presently available services. Whilst it is understandable that FTTP needs to be deployed to deliver today's services now, fibre investments are anticipated to serve communities for the coming century. The same cannot be said for *any* other form of access. FTTP should be evaluated more from its capabilities to deliver services in the future than to deliver them today. Any other basis for evaluation would be unfair and inappropriate. Refer to Recommendation 5.

	p34	In order to address the viability of the network proposed for the future, it is more important to address retail pricing for future products than for products that are presently available. These products include Internet Access but more importantly SmartGrids, eHealth, eSecurity, conferencing, entertainment, voice and other applications. We anticipate that Australia's applications marketplace will be vibrant and competitive. Indeed, achieving these characteristics will be sure signs of the success of its FTTP deployment. In order to ensure this outcome, it might be necessary that some initial price controls be imposed for basic services. It might also be necessary that government departments and enterprises (including but not limited to the public health and education systems) actively move to establish service delivery via the applications marketplace.

2f. The effects of the NBN on the availability, price, choice, level of innovation and service characteristics of broadband products in metropolitan, outer-metropolitan, semi-rural and rural and regional areas and towns

One of the substantial promises of the FTTP NBN programme is to bring broadband equivalence with significantly greater technical capabilities to the entire nation. Previous initiatives have attempted to improve services for marginalised and forgotten communities, but the FTTP NBN policy goes much further than ever before. When implemented, the NBN will have achieved one of the most profound transformations of infrastructure anywhere in the world. It will establish a telecommunications foundation that will benefit Australians for generations to come, as the twisted pair copper network did for generations past.

Earlier in this submission, we outlined our belief that the key to unlocking the value in any national broadband programme is in identifying, promoting and harnessing the value of new applications. We said that even from the perspective of consumers, it's the value of the applications and the ability to access them that are most important.

Most consumers won't really think much about whether applications are delivered over wireless, satellite, fibre, DSL or coaxial cable. They will however desire great access - and they will notice and think about how well different applications perform. They will notice and think about whether some kinds of application are only available or practically perform well in some parts of the country or only from some broadband providers.

Consequently, we think that the focus of attention when it comes to evaluating the degree of competitive choice and measuring competitive outcomes should be firmly directed towards applications and not the underlying technologies or architectures per-se.

For example:

- Will a competitive choice of eHealth applications and providers be available for metropolitan, outer-metropolitan, semi-rural and rural consumers alike?
- Will eEducation function just as effectively for students in remote areas as it will for those living and working in towns or cities?

- Will a comprehensive choice of interactive entertainment be available to those in urban areas and in bush communities?
- Will the 200+ ISPs offering services in the state capital cities similarly offer accessible services in outback communities?
- Will it matter whether Australia's employees working from home are based in the suburbs or a regional community?
- Should a newly formed eBusiness base its operations in a city, or town, or should it move offshore?

We don't think the answer to any of these questions will depend upon how many dark fibre access seekers will be interested to interconnect to the NBN in any particular community, or upon whether different investors are able to lay their own fibres in ducts. The answers are more likely to depend upon:

- how easy it will be for an applications provider to gain wholesale bitstream access to the NBN anywhere in Australia,
- what market footprint will be covered from each Point Of Interconnection and the cost of making that interconnection,
- will each Point Of Interconnection provide exactly the same technical capabilities so that an application developed for the Sydney metropolitan market could, with zero additional effort on behalf of the applications developer, be delivered identically and with the same level of consumer performance in Titjikala, NT.

In light of these questions, the (2f) discussion point seems to be misdirected. The availability, price, choice, level of innovation and service characteristics for the NBN will be intrinsically dependent upon the fundamental policy, legislative and regulatory decisions that are yet to be made or revealed, and in consequence, upon the NBN design possibilities and outcomes. We urge for these policies and decisions to be made with the issues we've raised firmly in mind.

We see no reason or cause that would impede excellent outcomes to all of the questions we've raised, with one exception. We would be concerned about the possible outcomes if these questions are not accommodated in the decision making process.

Fibre technologies are inherently more capable than other forms of broadband access

It is a characteristic of most traditional forms of broadband access that the further a consumer is from the broadband source, the lower the throughput. This key feature to deal with varying circumstances is called 'adaptivity' – and it refers to adaptation in speed to accommodate technical variations from one consumer to the next. Consumers living further from their DSL enabled telephone exchanges suffer poorer performance than those living closer. The performance of wireless services drops off dramatically with increasing distance from the base station and with barriers such as buildings or intervening terrain.

Although adaptivity has given rise to dissatisfaction with broadband access, it is a tremendous credit to the designers of these former broadband access technologies that the technologies work at all. Adaptivity, before the advent of FTTP technologies, was highly desirable.

Fibre access technologies are quite different than traditional adaptive access. No matter whether a fibre consumer is next door to a fibre exchange or 60km distant, consistent and reliable services of equally high rates can be assured to both – that's of course assuming

that the fibre access network is competently engineered in the first place and then subsequently maintained. And it's even more encouraging to realise that even though the various fibre equipment technologies available today are targeted towards delivering consumer services up to around 1 Gbit/s (that's 1,000 Megabits per second, or more than 100 times the typical best case performance for most Australian DSL consumers), the intrinsic throughput capabilities of the optical fibre infrastructure itself are virtually unlimited, and are ready to be harnessed with future equipment upgrades.

2g. The extent of demand for currently available broadband services, the factors influencing consumer choice for broadband products and the effect on demand if the Government's FTTP proposal proceeds

More people are considering broadband as an essential service

The results from a series of recent studies which explored the role broadband services play in promoting economic growth and social welfare were published in June 2009[6]. The studies found that consumers are unwilling to part with their home broadband services even in the midst of the economic downturn and would prefer to cut spending on things like dining out and leisure travel. The results of research conducted by the FTTH Council North America and depicted in Figure 5 strongly correlates.

FTTH Council's Greenfields submission	p33	The UK based "Communications Consumer Panel", an advisor to the British regulator Ofcom, recently conducted a study exploring consumer perceptions of the importance of broadband services, and the results were reported by the BBC[7]. The conclusions indicate that "*UK consumers now believe broadband is becoming as essential a utility as electricity or water*".

Many consumers already consider broadband an essential utility even though they've never experienced FTTP. Especially after their first exposure to FTTP, many Australians are also expected to start to believe in the necessity of broadband access. In the context of the Senate's interest in demand, it seems more appropriate to focus upon the likely *future* demand for broadband than to consider just *current* demand for currently available services. Thus in evaluating the NBN proposal, the Council respectfully asks the Senate to consider likely demand for broadband (and its role and importance for Australian society and business) eight years hence, when the proposed NBN deployment is completed.

The Council has a view on how demand for broadband could like in eight years time.

For the past four decades, the demand for higher throughputs and higher download volumes has been (very approximately) increasing tenfold every six years as depicted in Figure 6. Although current broadband access technologies still have a little headroom in hand for those lucky consumers that live very close to an exchange or base station, we should legitimately expect that in eight years time, when market requirements and

[6] The study was undertaken by market research firms Penn, Schoen & Berland Associates and Ipsos MediaCT, and reported at http://lw.pennnet.com/display_article/365213/13/ARTCL/none/none/1/ALU:-Broadband-services-recession-resistant

[7] http://news.bbc.co.uk/2/hi/technology/8079637.stm , accessed 11th June, 2009.

demand has increased to more than ten times today's levels, many more consumers will be dissatisfied with their first generation broadband services because traditional technologies are already stretched to their technical limits.

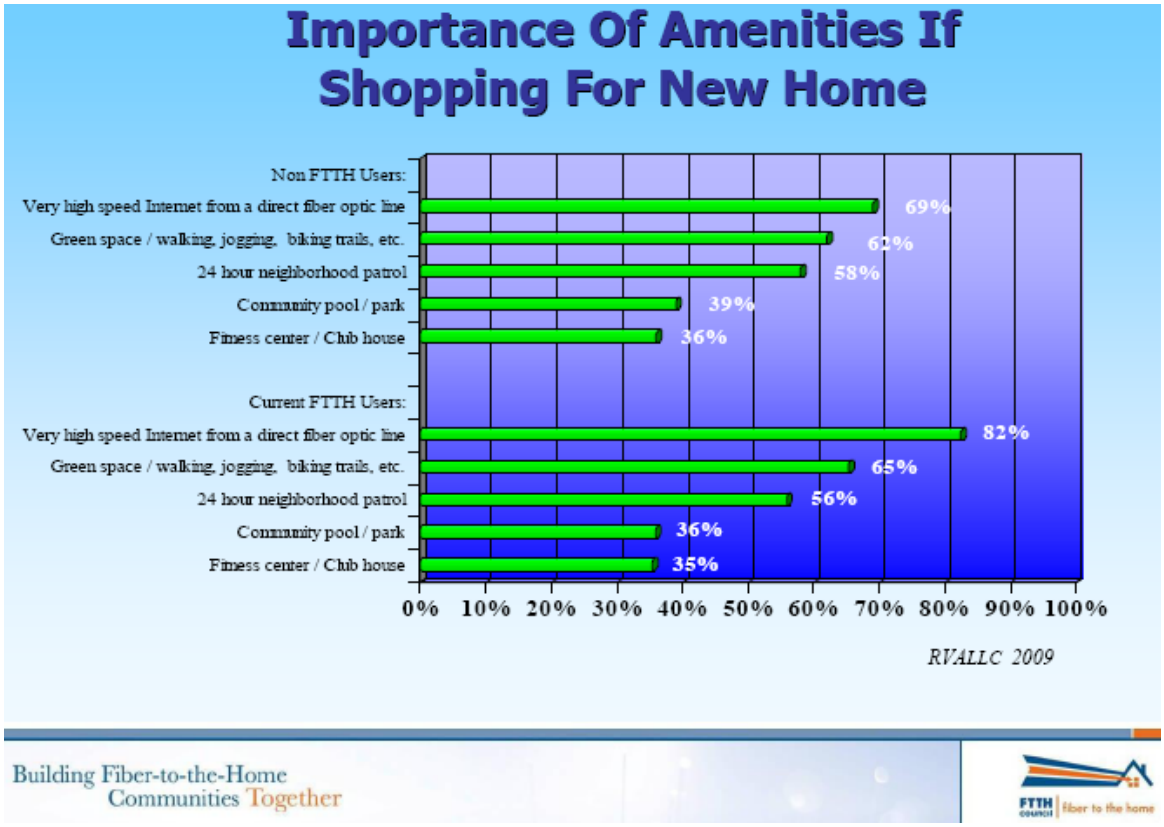

Figure 5 - The North American experience is that after experiencing FTTH first hand and enjoying its superiority over other forms of broadband, consumers don't want to lose it.

Having recognised that broadband is an essential service for a proportion of today's community, and will be considered to be essential for an even greater proportion in years to come, we encourage the commencement of a responsible and considered deployment of a well engineered Australian FTTP solution as soon as practical.

Demand for NBN services

We have little doubt that Australia's already substantial demand for services built upon today's broadband access technologies will translate into demand for services based upon fibre based access.

However assuming that the NBN is engineered to support:

- the secure, simultaneous delivery of multiple applications (i.e. consumers are offered a choice of more than just high speed Internet),
- from multiple applications providers (i.e. consumers can obtain services from more than one applications provider on the same broadband connection at the same time),
- with predictable levels of quality (i.e. without risk of impairment to the quality of any one application because of the other applications being used at the time),

then we are sincerely confident that the NBN will

- increase consumer choice of providers,
- exponentially increase the number of applications available and utilised, and

- generate exponentially higher levels of demand for broadband connectivity and usage

than current broadband networks. This is because current broadband networks cannot support these capabilities today. The inability of current networks to support these important next generation characteristics is holding back and even stifling the growth of the broadband applications marketplace.

Competently specified, engineered and deployed FTTP networks can achieve all of the listed objectives.

2h. Any technical, economic, commercial, regulatory, social or other barriers that may impede attaining the Government's stated goal for broadband availability and performance in the specified timeframe

In terms of economic barriers, there is little doubt that that further deterioration the Australian economy could impact upon the NBN's funding options and this would have the potential to slow progress of the project. Significant delays or a slow down in roll out would impair outcomes because the development of nationally important applications would likely suffer. It is important that once the project starts, it progresses as rapidly as possible so that applications developers have the incentive to invest and innovate, and consumers thereby have the incentive to connect and harness the benefits of these investments. Otherwise, we could end up with a capable FTTP platform delivering little more than today's limited application set.

Some economists have raised concerns that the economic downturn could well see the contraction of today's telecommunications industry. The Council disagrees because this view is contrary to several recent independent findings that consumers are more likely to hold onto their broadband connections during tougher economic times (reported above in our response to 2h). In fact, the deployment of a national FTTP network will assist in creating tens of thousands of new jobs directly, and through the development and take up of new applications, even more jobs indirectly.

The Council's biggest concern therefore is that the project doesn't proceed quickly enough, but we temper this concern with the recognition that it would be foolish to cut corners in the name of haste which result in substandard engineering, or ill conceived legislative or policy outcomes. Its important to proceed quickly, but not *too* quickly.

FTTH Council's Regulatory Reform submission	p4	Broadband projects need nurturing. The Council's experience in the Asia-Pacific region leads us strongly to believe that governments have a critical and ongoing responsibility to initiate and subsequently nurture broadband deployment.
	p9	Real and significant investments will be required to develop each innovative new application and bring it to market. This investment is quite independent from that required for FTTP infrastructure.
	p11	Without support for the development of broadband applications, infrastructure's full potential cannot be realised. Refer to Recommendation 3.

	p11	In order to encourage efficient and innovative development of key applications, the Council encourages evolution of today's competition regime. Greater focus should be directed towards encouraging better competition between applications developers.
	pp 27-32	Efficient design and deployment of fibre technologies requires a thorough evaluation and understanding of a broad range of engineering parameters. To efficiently deploy FTTP across the entire nation, we anticipate the need to identify and standardise upon several alternate technical choices within each of the NBN's 'layers' (the duct pathways, optical fibre network, equipment, points of interconnection).
	p33	If the NBN is built upon several technical alternatives, it is imperative that nationally consistent and uniform wholesale bitstream capabilities are available so any application can be transparently delivered using any access implementation. NBN bitstream capabilities should exceed the wholesale capabilities of today's broadband infrastructure by simultaneously supporting connectivity to different applications providers. Refer to Recommendations 25 and 26.

Environmental responsibility

The Council and its members endorse environmentally responsible network designs, deployments and operations. We understand the tremendous contribution the telecommunications industry can make towards addressing climate change both in the design and operation of networks as well as through the enablement of new applications which can reduce our personal carbon footprints as we live our day to day lives and do business.

In March 2008, Kiyoshi Mori, Vice Minister for Policy Coordination at Japan's Ministry of Internal Affairs and Communications (MIC) presented results of a MIC study exploring the reduction of CO_2 emissions attributable to savings enabled by its e-Japan, u-Japan and IT reform policy initiatives. The study found that by 2010, Japan's ubiquitous network society will contribute a net 26.5 million ton reduction in CO_2 emissions (2%) compared with the year 2000 aggregate level of 1,337 million tons[8].

[8] The deployment of network equipment and additional consumer electronics will lead to an increase in CO_2 emissions of 6 million tons. Reduced traffic emissions attributable to increased teleworking will save 4.1 million tons of CO_2. Savings attributable to streamlining production, distribution and consumption subtract a further 10.7 million tons of CO_2 compared with 2000 levels. 17.7 million tons will be saved through industrial restructuring reducing the burden of heavy industry.

The FTTH Council encourages the Australian government to explore the full potential of FTTP technologies and improved processes to help Australia meet and exceed its international carbon emission reduction obligations.

Improving Australia's environmental performance is too important for it to continue to be treated as just another political issue. It is important to reach Australian agreement and start to make real progress regardless of whether other countries have commenced programmes or not.

We believe that too little attention has been focused on the environmental potential of the FTTP NBN. We call for more effort to be directed towards green ICT programmes and initiatives and urge all sides of politics to come together and agree to move forward quickly.

FTTH Council's Regulatory Reform submission	p45	Environmental evaluation criteria should be included into the selection processes for all future IT and telecommunications initiatives, including the NBN. Carbon footprint and environmental targets and guidelines should be established to assure (i) responsible design to assure the minimisation of the long term environmental footprint of the NBN and its operations, (ii) responsible manufacture of all ducts, cables and equipment, regardless of country of origin, (iii) construction practices during the NBN's deployment. Refer to Recommendations 44 and 45.

Harnessing the support of local government

There are a range of specific issues which apply to local government. The Council foresees that it will be vital for the federal and local governments to coordinate to deploy the NBN. We anticipate that efficient coordination will be one of the short term challenges of the project.

FTTH Council's Greenfields submission	p10	There are too many local issues to be accommodated for the NBN deployment to be effectively coordinated and implemented solely at the national level. We anticipate that at least during the initial stages of the NBN roll out, it will be imperative for the Federal government to provide significant assistance to local governments.
	p11	The government has an important role to play in educating consumers about the need to adequately prepare their homes and businesses for the new applications that will become available over the NBN. Refer to Recommendation 11.
	p13	Federally defined templates should be used to provide a uniform framework which can then be effectively applied at the local level. Refer to Recommendations 15 and 16.

	p14	It is urgent for the Australian workforce to be trained and prepared for a rapid commencement of the national build. Refer to Recommendation 17.

2i. The appropriate public policy goals for communications in Australia and the nature of any necessary regulatory settings to continue to develop competitive market conditions, improved services, lower prices and innovation

Accommodating the different needs of different consumers

Although we have said that speed and download volume are not to be the only parameters to consider when evaluating broadband proposals, they are nevertheless important. For the past four decades, the demand for higher throughputs and higher download volumes has been (very approximately) increasing tenfold every six years.

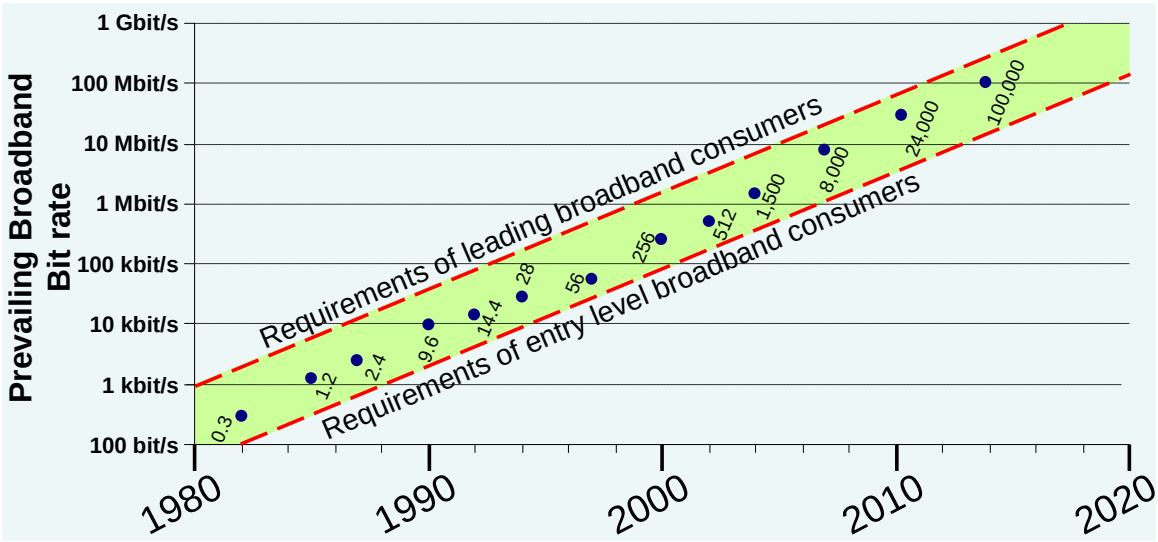

Figure 6 – Historically, broadband rates have increased approximately tenfold every six years

Additionally, even within today's constrained (relative to FTTP) service offerings there are a range of different types of broadband consumer, ranging from those who casually use the Internet to browse the web and to fetch email, to those who conduct businesses from home. In rough terms, high end broadband consumers can require ten or even one hundred times the access capabilities compared to low end broadband consumers.

We think it significant that up until the present FTTP based NBN policy announcement, these facts have been systematically overlooked. More often than not in the past, policies and programmes have aimed to address market failure by replicating basic broadband capabilities in underserved segments of the community. There has been little previous recognition of the range of demand for different broadband capabilities throughout the community and to acknowledge the importance of satisfying the legitimate needs of higher end broadband consumers.

The spotlight has rarely been directed towards the fact that implementing policy takes time and that by the time policy has been given effect, the market demand might have moved on and expanded. If the service capabilities promoted by a remedial broadband programme are too low, by the time they are deployed, subsidised services are likely to be inadequate for higher end consumers. Although broadband remedial programmes are

certain to achieve a political "tick of the box", ill conceived remedies will result in the underlying problem resurfacing soon afterwards.

The Council urges this and future governments to understand and accommodate the needs of a range of consumer types and to anticipate the community's need for even greater service capabilities during the investment life of subsidised government services. We recognise the constraints of limited capital availability, yet urge for capital to be invested wisely so that the problems that subsidies are intended to address are prevented from recurring.

FTTH Council's Regulatory Reform submission	p8	It is important for the government to propose a solid starting foundation. This start should include a nationally coordinated deployment plan, clear industry development policy, a well defined competition framework and incentives to support industries that stand to benefit from the planned FTTH deployment. Refer to recommendation 1.
	p10	Competition should be optimised to assure a vibrant, innovative and viable applications industry that enables Australians to transform their ways of life. This outcome doesn't *necessarily* derive from the kind of competition that focuses on and encourages the deployment of parallel ducts, or parallel cables, or parallel DSLAMs or parallel infrastructure of any kind. Ultimately, it's FTTH's superlative capability to support *parallel applications* that will underpin its true national value. Refer to Recommendation 2.
	pp 11-15	There is a need to redesign policy, regulation and access arrangements to support a new 'connectivity model' – that is, the manner by which access seekers deliver applications to end users through the network. An Internet-centric view towards broadband is likely to impede development and competition in important new applications markets. Refer to Recommendations 5 and 6.

	pp 36-38	Today's fixed infrastructure provides the community with a certain level of assurance that it has a dependable lifeline in times of emergency. It is important that FTTH, which will ultimately replace other fixed telecommunications infrastructure and become the backbone for wireless services, is reliable, dependable and resilient against failure and attack. Network security, resilience, reliability and availability are features that are unlikely to excite many Australians until they are personally impacted. If implemented perfectly, these attributes go completely unnoticed. It is certainly easier and less expensive to implement a less secure, resilient, reliable and available network design, and there will be little effect on network performance until there is some unforeseen event. Regardless of the cause of a failure, a seemingly less expensive network could end up costing a lot more. Refer to Recommendations 28 to 33.
	pp 39-42	The present NBN policy identifies some very high level national objectives and key applications and is a great start to the NBN initiative. More detail is required. The policy should be developed to articulate the manner Australians will access and benefit from the new broadband applications. Without additional clarity, the Council is concerned that important engineering and technical requirements could be overlooked. Refer to Recommendations 35 to 38.
	pp 42-44	In Recommendation 39, we urge the implementation of a strong digital economy vision accompanied with initiatives to promote the benefits of FTTP. In Recommendation 41, we urge recognition of the value of the home based business sector to the digital economy. Home based businesses should be considered and encouraged as anchor tenants for the NBN.

FTTH Council's Greenfields submission	pp 6-7	Competition can take place at several 'layers' ranging from the physical to the applications. Attention should be provided to ensuring effective competition at each layer but particularly towards the higher layers which have the greatest capability to promote or impair competition between and innovation from applications providers. As an example, if a competition model is pursued which focuses solely towards getting two or more dark fibre access seekers to 'light up' the fibre for each community, the Council is concerned about competitive implications for those communities that will only ever attract a single dark fibre access seeker. This is why promoting national competition at higher layers is important. Imposition of national wholesale bitstream obligations for *every* dark fibre access seeker would streamline and encourage the deployment of national applications with national availability. Refer to Recommendation 7.
	p10	Greenfield policy, should as much as possible, be aligned with brownfield policy, to insure common issues are managed consistently. We appreciate that brownfield FTTP deployments incur additional issues that may require special attention. For example, the reuse of brownfield duct and overhead cable pathways is highly desirable from an economic and social perspective, and may justify technical deviation between green and brownfields in some circumstances.
	pp 11-12	The government has an important role to play in educating local government and consumers about the need to adequately prepare homes and businesses for connection to the NBN. The cost for connecting to and taking best advantage of future broadband applications could be substantially less expensive for consumers and businesses if they reticulate adequate cabling when renovating or building their premises. The Council members are dismayed when contemplating the number of Australians building and renovating today who fail to consider broadband cabling at the same time as they're running power, lights, TV, water, sewer and gas though their homes and businesses. Refer to Recommendation 12.
	p15	We recall the infamous mistake made during the 1800s when each state implemented different railway gauges! The only manner for assuring a truly *national* broadband network is to assure sufficient uniformity!

Setting clear reference points and defining Open Access

A lot has been discussed in the media about 'Open Access'. It is a foundation principle of the FTTP NBN policy. Different governments from around the world claim to be working

towards ‘Open Access’ or implementing policies to support ‘Open Access’. Nowhere yet has the term ‘Open Access’ been defined.

The Council calls for clarity, in a technical sense, on what ‘Open Access’ means.

- Upon what technical parameters and principles will ‘Open Access’ be implemented?
- What technical outcomes will Australia’s ‘Open Access’ networks achieve and how will these change or uphold the nature of competition?
- Will the ‘Open Access’ which is implemented encourage or discourage national applications development and national applications availability?
- Will the FTTP NBN simplify consumer choices as they look to find the best mix of applications to meet their individual needs, or will it confound consumers by encouraging a maze of exclusive partnerships delivering different outcomes and different value in different geographic markets?

FTTH Council’s Regulatory Reform submission	p 33-34	The wholesale open access regime should be sufficiently technically harmonised to the extent that access seekers can bring truly national applications to 100% of the Australian population. Applications developed for FTTH should be compatible with wireless access also. This requires harmonisation of the technical capabilities of the FTTP and other access technology builds. We urge the government to clarify how uniform wholesale services can be provided across the FTTH, the wireless and satellite platforms, to minimise potential burdens faced by applications providers wanting to offer national application availability. Refer to Recommendations 25 and 26.

Perhaps even before defining what ‘Open Access’ means, the government should first clarify unambiguously the nature of the demarcation between the NBN Co and the consumer at their homes and businesses, and the nature of the equivalent demarcation with access seekers at the Points Of Interconnection. Today’s concept of ‘network boundary’ was conceived with a single application (telephony) in mind and may not easily translate into the context of the FTTP NBN:

- Will the NBN Co’s responsibility extend to the end of the optical fibre as it enters the consumer’s premises, or will it extend through to the network connection(s) into which consumers can connect their computers, telephones and other broadband appliances?
- From where will consumer premises equipment draw power, and how will SmartGrid energy providers manage load in the consumer premises without impacting the operations of the NBN?
- At what locations will access seekers interconnect with the NBN, and how?
- What responsibilities will individual access seekers need to accept for ensuring the integrity of the NBN and of consumer services (presuming consumers will have the opportunity to receive services from more than one NBN access seeker simultaneously)? What liabilities will access seekers incur if, through their own

negligent actions or negligent configuration, they impact other access seekers or consumers.

- What assurances with the NBN Co provide wholesale access seekers and consumers about the quality of traffic conveyed through the NBN and the reliability of services?
- Etc

It should be apparent that, in a technical sense, the topic area of 'Open Access' is very broad. Without further clarification on the meaning and proposed implementation of 'Open Access', it is difficult for the Council to form an opinion about the adequacy or otherwise of the policy goals for communications in Australia, and the adequacy of regulatory settings.

2j. The role of government and its relationship with the private sector and existing private investment in the telecommunications sector

In order for it to be truly national, Australia's NBN programme will encompass all areas and all communities. From a private investment standpoint, some of these will be more commercially attractive than others. The Council's members recognise that there are areas in which commercial FTTP investment is unlikely to ever initiate of its own accord.

The government's role should extend *far more* than simply injecting funds and incentives to overcome the disincentive for investment to proceed in the less economic area. Delivering next generation broadband services and maximising the success of the investment invites consideration beyond the telecommunications sector alone.

FTTH Council's Regulatory Reform submission	p5	The Council's experience with the deployment of FTTH services in the Asia Pacific region leads us to believe that all successful government supported FTTH initiatives have comprehensively addressed issues well beyond just infrastructure.

At the very least, the government must ensure that the national network is deployed in a sufficiently consistent and uniform manner as to be able to benefit from economies of scale both during its construction and subsequently through the coming century of operations and maintenance.

The Australian community / taxpayer that will underwrite this infrastructure investment will equally be its beneficiary. The kinds of outcome listed earlier in this submission will deliver potential annual GDP increases which in Singapore have been estimated to be up to 1.5%. It therefore makes sound social and financial sense for the government to be the major investor in this unique infrastructure project. The Council believes this is strongly supportive of the proposition that seed funding should come from the Federal Government.

As we have indicated earlier, the return to the taxpayer will depend, to some extent, upon how quickly the roll out proceeds. We base this view on a belief that national utility will be derived from a competitive, thriving and innovative applications sector, noting that it's the applications themselves that deliver utility, not the cables and equipment which enable those applications. Without proceeding at a reasonable pace, there won't be sufficient consumers connected to the NBN to attract investment from the applications providers upon whom realisation of national utility will depend.

2k. The effect of the NBN on the delivery of Universal Service Obligations services

FTTH Council's Regulatory Reform submission	pp 38-39	We believe fibre will ultimately replace all other fixed access alternatives. It will therefore ultimately play a substantial part in maintaining whatever becomes of today's USO. Today's Universal Service Obligation is met by Telstra in a vertically integrated manner. The proposed NBN will effectively separate the provision of access and applications in a structurally separated way. The USO needs to evolve because of the industry separation implications, even if Telstra itself is not separated. This suggests the USO should evolve towards a separate Universal Fixed Access Obligation and Universal Telephony Obligation. Refer to Recommendation 34.
FTTH Council's Greenfields submission	p33	The Council strongly sees an ongoing need for a new form of USO on the NBN infrastructure and potentially a new form of USO dealing with the provision of structurally separated applications.

We provided several references in our response to (2g) indicating that an increasing proportion of consumers are considering broadband to be an essential service. We believe that in the future, there may be strong drivers to declare additional universal applications i.e. beyond the telephony application.

2l. Whether, and if so to what extent, the former Government's OPEL initiative would have assisted making higher speed and more affordable broadband services available.

To the extent that the OPEL initiative can be characterised as having aimed to expand the footprint of Internet access services to Australians underserved by alternate access technologies, the FTTH Council commends the objective. The need to provide Australia's remote and regional communities with better access to the Internet remains. The Council encourages the government to redouble its efforts to improve services to Australia's remote and regional consumers.

The objective to extend the Internet access footprint should always be considered hand in hand with the transformative potential of multi-service broadband access, the promise of new and innovative applications that can address environmental, health and other community objectives. The concepts of 'Internet Access' and 'Broadband' are not the same. The value of broadband upgrades extend well beyond the value of Internet Access alone.

Whilst the OPEL project might have achieved significant improvements in the availability of Internet Access services to remote Australians, and we commend and support this objective, we are uncertain as to the extent that the proposed technical solution could have supported an innovative applications industry and the independent simultaneous delivery of services we have already discussed.

FTTH Council's Regulatory Reform submission	pp 16-17	We recognise the challenge of deploying FTTP to 100% of a nation's consumers and accept a need for FTTP services to be deployed alongside other forms of broadband access to ensure complete national coverage. We encourage policy makers to look towards approaches being undertaken in other leading broadband markets to deliver improved competition and infrastructure across multiple access platforms. Refer to recommendation 7.

We strongly encourage the justifiable deployment of any next generation access technology, not only fibre based, which supports multi-service capabilities for a variety of simultaneous applications and access seekers. We are uncertain whether the proposed OPEL solution could have adequately achieved this objective.

Editors

Stefan Keller-Tuberg	Principal Engineer, Access, Policy and Regulation, Alcatel-Lucent, Canberra, Australia. Chairperson of Regulation and Policy Committee, FTTH Council Asia-Pacific.
Ross Yelland	FttX Market Development, Optical Solutions Australia (OSA). Member of Technology & Architecture Committee, FTTH Council Asia-Pacific.
Dr. Danny Wong	Chief Technical Adviser, SENKO Advanced Components (Australia) Pty. Ltd. Member of Technology & Architecture Committee, FTTH Council Asia-Pacific.
John Domelow domelow@ftthcouncilap.org	Marketing Director, Warren and Brown Technologies Pty. Ltd. Victoria, Australia. Member of the Board of Directors, FTTH Council Asia-Pacific.

Reviewers

Philip Anderson	President, Yamasaki Optical Technology, Australia. Member of Market Development Committee, FTTH Council Asia-Pacific.
Su-Vun Chung	Manager, Strategy and Business Development, Corning Cable Systems, Australia. Member of Market Development Committee, FTTH Council Asia-Pacific.
Stephen G. Foster	Managing Director, Emtelle Asia Pacific, based in Kuala Lumpur, Malaysia with regional Offices in Asia and Australia. Member of Regulation and Policy Committee, FTTH Council Asia-Pacific.
Frank Hufschmid	Regional Director, ONMS & PON Solutions, Asia Pacific, JDSU, Singapore. Member of Technology & Architecture Committee, FTTH Council Asia-Pacific.
Kevin Myers	Broadband Consultant and Business Development, Kordia Australia, Member of Regulation and Policy Committee, FTTH Council Asia-Pacific.
Yoshikazu Nakamura	Assistant General Manager, FTTH Products Promotion Office for Global Markets, Sumitomo Electric Industries Ltd, Tokyo, Japan. Member of Regulation and Policy Committee, FTTH Council Asia-Pacific.
Michael Whereat	Principal Economic Development Officer, Telecommunications & Professional Services Economic Development (Central), Finance and Business, Sunshine Coast Regional Council, Australia. Member of Regulation and Policy Committee, FTTH Council Asia-Pacific.
Giovanni Yogore	Sales & Marketing Manager, 3M, Australia. Member of Technology & Architecture Committee, FTTH Council Asia-Pacific.

FTTH Council Asia Pacific Contact Details

Media enquiries:	media-enquiries@ftthcouncilap.org
(Frank Jaffer)	Chairperson of Planning Communications & Events Committee, FTTH Council Asia-Pacific. Ph (+61 408 786 456)
Government enquiries:	regulationcom@ftthcouncilap.org
(Stefan Keller-Tuberg)	Chairperson of Regulation and Policy Committee, FTTH Council Asia-Pacific. Ph (+61 409 322 655)
General enquiries:	info@ftthcouncilap.org