



THE SENATE

SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

Axia – Additional Questions on Notice

Question One

How can the Australian Government ensure that whoever operates the NBN is committed, if not compelled, to continue to upgrade and invest in the NBN infrastructure, thus enabling greater innovation and competition among access seekers?

Axia's Response:

There are two approaches to ensuring continued upgrading and investment of the NBN – an incentive approach and an obligation approach. Axia recommends the Australian Government adopt both approaches. The first approach involves structuring the NBN with a commercial and regulatory framework that motivates the NBN operator to continue to invest in the NBN because it is in his commercial interest to do so. If the NBN is structurally separated from the rest of the telecommunications market, then the provision of wholesale transport and connectivity services will be the sole purpose of the NBN operator's business. In this scenario, the success of the operator is solely determined by maximising take-up and utilisation of the NBN. It will only be through modern and competitively priced services that the operator will be able to grow its business. Structural alignment of the operator's commercial interests with the Government's desire to maximise its investment in the NBN through continued private investment and modernisation is the most powerful way achieve the Commonwealth's desired outcome.

The second approach focuses on standards of performance in respect to adhering to a series of Service Level Agreement (SLA) metrics. These SLA metrics have to be upheld over time and as additional take-up of the network creates additional demand on the network which typically requires continued investment in the network. The regulatory framework would provide the regulator to require the Operator to offer the various standards of performance that are determined to be in the public interest given the related cost and the implications on rates. The Operator would be eligible to recover the related costs and make an incentive return as part of such a determination.

Question Two

A recent survey of Australian business CEOs found that a significant proportion of CEOs did not fully comprehend the positive benefits that broadband could have on their business.

1. How should the Government address this lack of awareness? For example, should the provision of awareness training be an integral component of the deployment of the NBN, to ensure that Australia reaps the benefits of the investment of significant public funding?

Axia's Response:



THE SENATE

SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

The Government should be a mainstream customer of these compelling services for its own operations as a primary tenant. This leads to two outcomes:

- a. It helps create a value chain in the private sector than can then also offer similar services to non-government.
- b. Everyone has a personal interaction with the government whether directly themselves, through their children or through their occupation. Businesses also have dealings with the government. The best way to convince anyone of the benefits is for them to experience superior, low cost broadband first hand.

Building awareness of the benefits of broadband and the NBN should really be the responsibility of all NBN market stakeholders and participants. From a public service perspective there is a role for the Government to play to build basic awareness and understanding of the general population. This education and awareness effort can then be driven down to the individual department level within both the Commonwealth and State governments. Departments such as Industry and Resources, Economic and Regional Development, Health, Education, Agricultural and Fisheries, and Environment all have a specific role to play in educating and encouraging the use of broadband to drive efficiencies, innovation and growth into these respective sectors. For example, with an NBN that connects all Australian communities onto a fibre grid, the Department of Infrastructure, Transport, Regional Development and Local Government should be educating and assisting communities to leverage the NBN to facilitate corporate relocation and high-speed broadband-based telecommuters thus keeping jobs and residents in the regional and rural communities.

Obviously, the private sector has a role to play in building public and corporate awareness of the benefits and uses of the NBN as well. Many of the private sector initiatives take the form of marketing and advertising for its various services. Regardless, a concerted and shared public and private effort to build awareness of the benefits of the NBN would be a wise strategy to accompany the build-out of the NBN.

Question Three

Given the support for the NBN to be operated as a wholesale business only, is there any reason why it could not be owned by government?

1. What implications could government ownership of the NBN have for future investment?

Axia's Response:

Technically, there is no reason why the NBN could not be owned by the government. However, for the NBN to deliver its full potential benefit to the Australian people it has to be an efficient high performing customer focused commercial enterprise that is quick to adapt to customer changing requirements. Typically the government governance that it tied to government ownership has too wide an interest to be optimal at dealing with this



THE SENATE

SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

customer challenge. This is not a phenomenon unique to Australia, but it is true of governments around the world. However, that is not to say that the government has no role to play in the governance of the NBN – quite the contrary. Since the NBN will be vital communications infrastructure for Australia the government must have a role that ensures that it has the ability to implement Commonwealth policy initiatives and represent the public interest. For this reason Axia believes the Public-Private-Partnership (PPP) is an ideal governance model for the NBN. Under a PPP, private capital and its associated commercial discipline is brought together with public capital and the public policy mandate. Under a strictly government owned NBN the commercial discipline is lost which usually results in inefficiencies lack of flexibility and a loss of operational focus.

2. Could the NBN operate as a government owned utility which is leased or franchised out to various access providers who would act as wholesale suppliers?

Axia's Response:

In the context of this question it is not clear whether the NBN is defined to be just the passive fibre infrastructure or if it also includes the active electronics on top of the passive infrastructure. If the intent is the NBN is the passive fibre infrastructure, then the challenge with the proposed model of government owned utility leased to multiple access providers is that the economics of multiple access providers on the passive infrastructure break-down as soon as one moves outside a densely populated metropolitan area. The economic sizes of the markets in regional and rural Australia do not support competitive operators on top of the fibre. Furthermore, it is likely that such an approach would lead to these access providers “cherry-picking” the market by providing service in the economically viable communities and leaving the others without service much like the situation we experience today. For this reason it is important to have a single operator that is responsible for providing a ‘universal’ service on the network. From the operator’s point of view, they are then able to distribute their costs across the network by having the more profitable areas of the network support those areas where the economics are more challenging.

It is important to note that the same principle of the need for a single service provider does not apply in the context of local access services providers (LASPs). In the “last-mile”, or local access space, it is entirely feasible and even preferable to have multiple LASPs competing in the same market. From the LASPs perspective the economic investment necessary to provide services in a single community, especially when there is high-performing affordable back-haul out of that community to a global gateway, is completely supportable by that market.

If the original intent of the question was to define the NBN as both the passive fibre and the active electronics, then this approach suffers from the drawbacks of pure public ownership of commercial networks described in the first part of the response to this question.



THE SENATE

SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

One hybrid solution that is viable is one where the government owns the fibre and related passive assets and leases access to them to an operator that owns the dynamic assets (routing, switching and optical components). The Government can make it a condition of the lease that the operator maintain all the passive assets and is accountable for the performance of services to the customers. This approach has the advantage of the government being able to strategically govern for the public interest the high cost long term passive assets whilst the operator has the challenge of utilizing the constantly changing, technology complex, dynamic “active electronics” component to deliver the evolving and diverse customer service and choice needed by the market place. The government would maintain the appropriate regulatory oversight. This strategic mix of private public ownership can provide a superior approach to solve the digital divide issues for regional and rural markets.

Question Four

What lessons can be leveraged in the Australian context from international experience of regulatory change and separation within the telecommunications industries?

Axia's Response:

The challenge of transitioning from the current regulatory paradigm of regulating the services on the network (voice calls and television channels) to regulating the network itself is one that all nations are facing. In Axia's opinion, the primary lesson to learn from the international sector is that operational separation, in the context of wholesale services on a Next Generation Network, does not deliver the benefits of a truly open access and structurally separated network. Operational separation is a compromise that does not need to be made and nowhere has it been demonstrated to be workable from the incumbent's competitors' point of view. Ownership (structural) separation is the only way to harness the profit motive for the right outcome as opposed to objective being corrupted by competing profit motives between the wholesale and retail sectors of an operationally separated business.

The expense of creating a fibre-based Next Generation Network combined with the near limitless capacity that such a network creates means that the network is natural monopoly. Therefore, it should be regulated as such. In Axia's experience a brand new network can be built and supported within the existing telecom spend of a jurisdiction. With a new network the Commonwealth has to opportunity to create a new regulatory approach more appropriate for the character of the network rather than being mired down in outdated regulatory paradigm.

Question Five

Many submissions have suggested that poor international connectivity will continue to impact on the price, quality and availability of Australian broadband services. Do you believe that there



THE SENATE

SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

should be complementary investment in overseas fibre links to ensure that the NBN does not just produce a new bottleneck at the international fibre gateways?

Axia's Response:

International connectivity does make up a component of the price of broadband services and indeed trying to access off-shore services with insufficient connectivity will impact the user's experience. However, it is worth noting that increasingly, many of the services that Australians will be accessing over their broadband connections will be "domestic" services that are not impacted by international links. For example, the emerging services in health, education and government that are moving on the network will all be services that are provisioned within Australia. As IPTV and personal video conferencing are becoming more prevalent, these too are services that are minimally impacted by international connectivity. Studies in some countries have demonstrated that when governments use a Next Generation Network like the NBN for transacting government business (both voice and data) the vast majority of the traffic remains "on net" meaning it has no reason to utilize international connections.

Furthermore, in the event that Australia has a country wide NGN fibre grid the Web 2.0 service providers such as Google, MSN, Skype and others will certainly locate more of their services and servers on Australian soil further reducing the real time reliance on international links. While all of these developments may be decreasing the proportion of broadband transactions that require international peering, the function of international peering still plays a critical role in the broadband value chain. Much of the power and utility of the internet is the fact that it is connected to rest of the world's information repositories. Axia believes that a meaningful contributor to the diversity of offshore connections to Australia is the dominance of Telstra domestically. It is simply not worth the investment today if you are just going to face dealing with Telstra in any event domestically. If Australia leaps to the forefront of nationwide connectivity combined with an open competitive market, the off shore diversity will develop.

It is possible as a last resort, that a public investment in international connectivity may be warranted at some point to ensure that sufficient capacity exists and that it is available on a fair and open access basis. However, the point to stress here is that the vast majority of utility and value of the NBN is not directly tied to real time international connectivity.

Question Six

Given that the NBN will become a critical component of Australia's national infrastructure, how can the Government ensure there is a high level of consultation, collaboration and coordination across the three tiers of governments that will need to cooperate in an infrastructure project of this size and significance?



THE SENATE

SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

Axia's Response:

The proper structuring of the NBN from both the governance and operational perspectives will go a long way to facilitating the necessary level of consultation, collaboration and coordination. The Government has stated that their preferred governance and funding structure for the NBN is a PPP. The PPP mechanism allows appropriate government representation in the strategic direction-setting and decision making for the NBN. The public side of the PPP could then contain representation from two or all three levels of government. Each level of government will have specific roles and responsibilities that correspond to their associated jurisdictions. In matters related to the construction and operation of the NBN, the NBN PPP should be responsible for coordinating efforts between the three levels of government.

If it is a compelling approach from the customer perspective and provides each level of government with services that are recognized as important to their jurisdictions, then one can start from an “aligned” base. Axia thinks that is the situation in Australia. The second step is to prevent the opportunistic leverage of jurisdictional power for other purposes. Usually the national government is in a position to ensure the parties executing the implementation of the NGN are not inappropriately distracted by other levels of governments compromising the cost, speed of deployment or performance outcomes.

Question Seven

It has been argued that the NBN should be treated as a utility in the same way as, for example, the power sector. However, following recent blackouts caused by high demands, criticisms have been raised of the apparent lack of investment for infrastructure upgrades.

1. To what extent may structural separation in the power sector have acted as a disincentive to investment?

Axia's Response:

Axia is not fully informed on the specifics of the Australian power market but we offer the following observations:

- There are two quite different segments in power: The transmission / connecting facilities and the power generating facilities. (Next Gen Networks analogy would be the fibre transport grid and the Web Services transported by the fibre grid).
- The kinds of power are standardized and commoditized in that sense where as the Web Services are the ultimate in diversity and evolution and reflect not just the “power” but also much of the function of the “appliance” that is plugged into the power socket.



THE SENATE

SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

- The challenge in structurally separating the power industry is that power companies are typically attempting to deregulate the power generating supply and the regulatory framework tends to want both committed guarantee supply contracts from the legacy generators, and competition from new diverse environment-friendly generating sources which often are smaller and have a spot supply character. There are few examples of jurisdictions that have fully deregulated the power generation sector and many have ended up somewhere in between, with hybrid regulation that leaves uncertainty in the investment in new committed generating facilities, thus delaying their development.
 - The lesson to be learned here that applies to the NGN environment is that the ubiquitous NGN that is focused on transport (power transport grid) and precluded from being in Web Services (power generation) will create the diverse Web services sector providing lasting choice for end users in the market place. This is because Web services do not have the structural capital and barriers of entry that characterises the power generation sector.
2. What danger is there that establishing the NBN as a utility in a similar way could have a similar outcome?

Axia's Response:

Given the observations presented above, we feel that a 'similar outcome' will not result from establishing the NBN as a utility as was experienced in the power sector if the utility has the right scope of business, clarity of performance objectives and has the commercial incentives aligned with the public interest outcomes. This is not simple or easy as the approach is transformational and depends on getting it right. This is where experience and a proven track record are critical.

Question Eight

The recent submission by C-Cor states that the expansion and/or upgrading of the existing HFC network would provide a much faster and more economical upgrade of broadband capabilities in urban and regional areas, leaving more funding to provide other technologies to under-served areas.

1. What are your views on this suggestion?

Axia's Response:

If HFC is viewed as one possible local access technology and it is only being compared to FTTN, then it definitely has a place as part of a larger NBN network. However, if proponents of HFC intend it to be the core element of the NBN and it is intended to create



THE SENATE

SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

true broadband infrastructure that will facilitate the growth of the digital economy and enable Australia to compete in the global market for decades to come, then the expansion and/or upgrading of the existing HFC network will fall far short of this goal.

While HFC provides better performance than the various xDSL technologies, it still has fundamental limitations that prevent it from being a viable ‘next generation’ network technology. Specifically, two of its greatest limitations are it only provides a best efforts service and it is extremely asymmetrical. The best efforts service means you cannot guarantee specific network performance levels that emerging applications like tele-medicine, HD video conferencing and IPTV demand. Its asymmetry means that it may be able to deliver up to a max of 100 Mbps on the download but the upload is a mere fraction of that capacity. Emerging digital economy applications in both the retail and commercial sectors will demand guaranteed performance and symmetrical communication bandwidth.

One may argue that *upgrading* existing HFC networks from DOCSIS 2 to DOCSIS 3 to deliver an up-to 100Mbps capacity could be done economically and quickly. However, the same argument cannot be made for *expanding* these same HFC networks. For practically the same effort and expense that would be required to expand the HFC network one could install a brand new fibre-to-the-premise (FTTP) network. Fibre is the only “future-proof” technology given that its capacity is practically limitless and using an optical Ethernet local access technology the operator can provide guaranteed fully symmetrical and duplex bandwidth.

Finally, an HFC approach does not address the backhaul network that is required to support not only HFC implementations, but all local access networks and connect together ALL communities to form a truly National Broadband Network.

Question 9:

What is your customer mix (ie proportion of government, business and residential customers)?

Axia's Response:

On the Alberta SuperNet Axia provides Fibre-to-the-Premise services for all government locations and services from a community Point-of-Presence (PoP) for non-governmental services. Therefore, in the statistics below a “service” in the governmental context is a government location such as a hospital, school or provincial government office building. A “service” in the non-governmental context is either a wholesale enterprise customer or an Internet Service Provider who would then resell the service to tens to hundreds of individual residential customers off of a single ISP service. With this context, Axia sells a total of 5,293 services in Alberta of which 72% are sold to government, 24% are resold to ISPs and 4% of our services are sold wholesale to enterprise customer.



THE SENATE

SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

All Sectors	SN Services	%
Business	221	4%
Residential	1,272	24%
Public Sector	<u>3,800</u>	72%
Total	5,293	

Of the 1,493 services we sell in the non-government sector, 15% are wholesale to enterprise and 85% are sold to ISPs that then resell to their residential and commercial customers.

Non Gov Sectors	SN Services	%
Business	221	15%
Residential	<u>1,272</u>	85%
Total	1,493	

In France Covage provides wholesale services to ISP's and Closed User Groups for end-users who are businesses, government offices or residential customers. Covage provides fibre to the premises to business and government end-users, with passive fibre connection or Ethernet bandwidth at the choice of the ISP. For residential customers, Covage provides fixed wireless service.



THE SENATE

SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

Covage sells a total of 2,294 services in France of which 8% to government users, 18% to business users, and 74% residential users, all sold indirectly through ISP's.

All Sectors	Covage Services	%
Business	421	18%
Residential	1,695	74%
Public Sector	178	8%
Total	2,294	

Question Ten

What role should the ACCC and ACMA have in an NBN environment? Would there be any advantage in a merging of regulatory bodies to reflect the increasing convergence of NGN technologies?

Axia's Response:

If the NGN is structurally separated as between transport / connectivity services and Web services then the roles of the ACCC and the ACMA are substantially aligned with the industry segmentation. The ACCC would deal with the NGN transport / connectivity services and the ACMA would deal with the Web services.

Properly deployed the NGN would create competitive alternatives in all critical functionality in Web Services and Web Services would not require regulation in respect of price or quality of service in this sector. The public interest could be protected by cultural / nature of content regulation and the broader rules with respect to market concentration and predatory pricing that apply to commercial operations in Australia.

The regulation of the NGN transport / connectivity services combined with the structural separation of that party from the Web services sector remove the historical requirement to regulate telephone calls for example.

The roles that the ACCC and ACMA currently have are perfectly appropriate for a properly structured NBN environment. One may argue that the any confusion or overlap in jurisdiction or mandate between the two organisations is a result of the current organisation of the telecommunications sector and the dysfunctional regulatory structure that has evolved



THE SENATE

SELECT COMMITTEE ON THE NATIONAL BROADBAND NETWORK

over past several decades. When the sole purpose of the copper telephone network was for making voice telephone calls, it made sense to regulate the voice call. The same is true for the cable television networks. However, in the digital age where these networks are being utilized more for data and applications than for their original purpose, trying to regulate the network by regulating the ‘services’ carried on the network is no longer a functional approach. Further exacerbating this regulatory quagmire are incumbent carriers that view any change to regulatory approach as a threat to their market position. This state of affairs in telecommunications regulation is truly a global phenomenon and certainly not unique to Australia.

Axia has argued that given the “natural monopoly” character of the fibre portions of the NBN, the network should be regulated as a natural monopoly. NBN rates and access should be fully regulated by the ACCC. The role of ACMA would then clearly lie with regulation of the content and services running on top of the NBN. Under a structurally separated NBN the NBN operator would only deal with ACCC regulation and whereas the Application Service Provider and Retail Service Provider market would fall under ACMA jurisdiction.