

**Submission to the
Telecommunications Review Team
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About the Author:

John de Ridder is a former chief economist of Telstra. His 18 year career at Telstra included a number of roles including broadband and data pricing and USO costing. Since leaving Telstra 14 years ago, he has consulted to various domestic and international organisations. His OECD report on broadband¹ was referred to extensively in the Berkman (Harvard) Centre Report to the FCC on US broadband policy². He re-wrote Module 2 (Competition and Pricing) of the ITU/*InfoDev* on-line toolkit for telecommunications regulators³, was a key player in TransACT's proposal for the 2008 National Broadband Network tender and is a critical analyst of the NBN in Australia.

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¹ *Catching-up in Broadband – What Will it Take?* – an econometric study for the OECD, Sept. 2007
available at <http://deridder.com.au/files/OECD-B-band-JdR-April-07.pdf>

² Final report available at http://cyber.law.harvard.edu/publications/2010/Next_Generation_Connectivity

³ ICT Regulation Toolkit at <http://www.ictregulationtoolkit.org/en/home>

1 Introduction

The adoption of the building block method (BBM) for telecommunications makes sense. This submission has a couple of caveats in terms of the treatment of initial losses and the impact of continuing to use fully depreciated copper assets. And it introduces an idea from a regulator with over a decade's experience with the BBM about how to improve incentives for performance.

The move to utility regulation should involve more than just the regulated asset base (RAB). The move provides a major opportunity for utility-like pricing that will generate higher adoption and use as well as more affordable entry-level pricing as part of the set of anchor products.

The main focus of this submission is a novel approach to pricing anchor products that will lead to increased adoption and use of broadband. It urges New Zealand to adopt a two-part wholesale tariff; but not in the same way as Canada and Australia have done.

2 What can New Zealand learn from Australia?

New Zealand is in good shape. According to the Options Paper, over 60 percent of the build in the original UFB areas has now been completed (compared with about 30 percent in Australia). Demand is growing quickly. By the end of February 2016, uptake had hit 20 percent (versus 40 percent in Australia⁴). Retail competition is thriving, with 89 Retail Service Providers (RSPs) now selling UFB services (compared with just '50+ RSPs selling NBN based services in Australia at July 2016'⁵).

2.1 Policy

Like New Zealand, Australia is among the first countries in the world to move to a structurally-separated market for fixed line services. So, insights gained from across the Tasman should be of interest to New Zealand – although Australia could learn more from New Zealand.

By 2025, the Government's vision would see: 99 per cent of New Zealanders able to access broadband at peak speeds of at least 50 Mbps (up from 97.8 percent getting at least 5 Mbps under the Rural Broadband Initiative); and the remaining one percent able to access at least 10 Mbps. This is similar to the Australian Government's current policy that the multi-technology mix NBN should provide "*download data rates (and proportionate upload rates) of at least 25 Mbps downloads to all premises and 50 Mbps to 90 percent of fixed line premises as soon as possible*"⁶.

⁴ At 28 July 2016 <http://www.nbnco.com.au/content/dam/nbnco2/documents/nbn-rollout-metrics/nbn-rollout-metrics-280716.pdf>

⁵ CommsDay Wholesale & Datacentre Summit, July 2016 at <http://www.slideshare.net/CommsDay/commsday-wholesale-datacentre-summit-2016-nbn>

⁶ Statement of Expectations, April 2014 <http://www.nbnco.com.au/content/dam/nbnco2/documents/soe-shareholder-minister-letter.pdf>

But, in both cases these are **coverage** objectives when what really matters for national productivity, investment and economic growth is **adoption** and **use** of broadband.

Unlike New Zealand, Australia made a giant, unconscious leap from infrastructure based to service based competition policy when it shifted from the original 2008 plan for a “value for money” FTTN to a multi-billion dollar FTTP network in 2009. Worse, the revised policy called for the closure of perfectly good HFC broadband networks to prop-up the start-up company the government created to build a national FTTP network.

New Zealand believes that fixed broadband is a natural monopoly and that with structural separation creating wholesale only UFB access networks the regulatory focus can shift from price discrimination to regulation of monopoly pricing and performance.

2.2 The RAB

The proposed move to utilities regulation using a ‘building blocks’ pricing model (BBM) is correct. The Australian telecommunications sector has certainly welcomed the ACCC’s shift from TSLRIC cost modelling to the BBM method. And, the New Zealand Commerce Commission is clearly finding the current TSLRIC costing approach very trying. As it reported in its December 2015 decision: *“This is the most complex and extensive economic model the Commission has ever been tasked with creating, evidenced by the 240 submissions – totalling more than 6,000 pages – we have received during our consultation process”*⁷

Setting the regulated asset base (RAB) once and then using the BBM to roll the asset base forward and estimate allowed revenues is much simpler than TSLRIC. The idea of combining the copper and fibre assets in one RAB for Chorus seems to be based on political considerations and expediency, for which I have some sympathy. But, the Government will have to direct the Commerce Commission otherwise it might be obliged to keep them separate when it would prefer not to⁸. In practice, it should not affect the initial valuation of the combined RAB as the Commission used fibre as the basis for costing the copper network in its TSLRIC model⁹.

With a single RAB, it follows that copper assets should remain included even if some are not used; otherwise there will be an incentive to keep them in service. It does not follow that Chorus will not continue to use fully depreciated copper assets excluded from the

⁷ <http://www.comcom.govt.nz/the-commission/media-centre/media-releases/detail/2015/commission-releases-final-decision-on-wholesale-broadband-prices>

⁸ From footnote 10 of its December 2015 final pricing review for UCLL: *“Including demand for both copper and fibre connections also avoids the UCLL price increasing as end-users migrate from copper to fibre. If only copper demand was included, the number of connections over which the fixed costs of building the UCLL network are spread would decrease over time as end-users migrate to fibre, leading to a higher price per line”*.

⁹ <http://www.comcom.govt.nz/regulated-industries/telecommunications/regulated-services/standard-terms-determinations/unbundled-copper-local-loop-and-unbundled-bitstream-access-services-final-pricing-principle/>

RAB in, say, LFC areas. Chorus would be able to increase its revenues under price cap regulation and would be able to reduce its prices (revenue) in its own footprint under revenue cap regulation.

New Zealand should be very cautious about either emulating the initial cost recovery account (ICRA) approach that the ACCC has sanctioned for the NBN in Australia or capitalising losses in the RAB. In both cases these are open-ended when recovery should be over a defined short period. To what extent are the losses sustained by UFB providers up to 2020 due to supply running ahead of demand versus pricing below copper? In terms of the latter, on both sides of the Tasman, policy makers and regulators have not been aligned creating difficult situations¹⁰.

After more than a decade of applying the BBM, the Essential Services Commission Victoria (ESCV) finds that *“Our experience suggests the role of the building blocks method in our pricing approach has not been well understood..... the building block model is not creating incentives for management to pursue more efficient practices and to pass on the cost savings to customers”*¹¹. This is a danger that New Zealand faces with assessing the prudence of capital expenditure post 2020.

The ESCV’s proposed framework (consultations closed in late July 2016) would *“allow business to earn a higher rate of return when they submit proposals that account for customer preferences and concerns, and that provide accurate cost forecasts. On the flip side, water businesses that deliberately or complacently submit proposals based on inflated costs would earn lower returns. Returns would also be linked to performance against outcome commitments.”*

Apparently, this has some similarity to the menu-based approach used by the UK energy network regulator, Ofgem. It may help avoid arcane debates about the cost of equity with UFB providers in New Zealand.

3 Where we are heading

New Zealand is on the cusp of achieving world-class high-speed broadband. To achieve this, the UFB will need these three features:

- It will support any application from any provider.
- It will be delivered over an unrestricted pipe like water.
- It will be affordable with a high level of adoption and use.

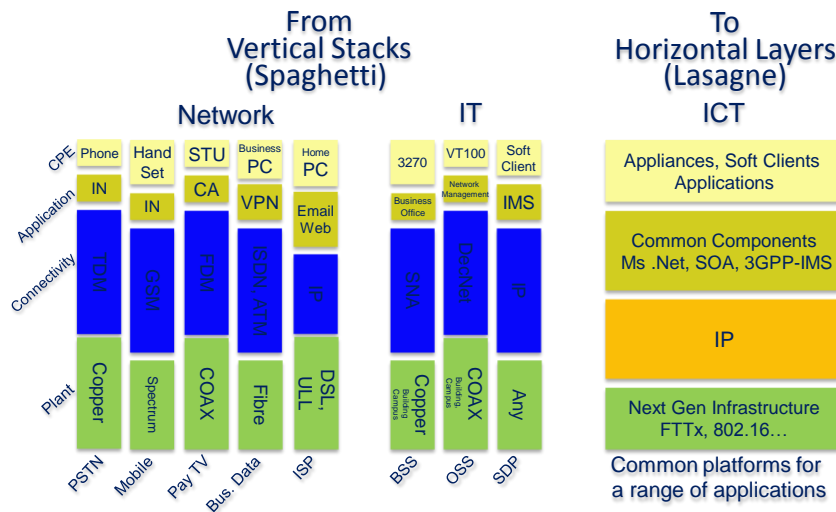
3.1 A new business model

¹⁰ The problems of transitional pricing: In both Australia and New Zealand, regulators have been part of the problem in migrating to next generation fixed networks at <http://deridder.com.au/site/wp-content/uploads/2014/10/Economuse-2014-10-15.pdf>

¹¹ May 2016 <http://www.esc.vic.gov.au/project/water/22772-review-of-water-pricing-approach/>

The communications industry is seeing a shift from application specific (telephone) networks to application agnostic (all IP) networks (Figure 1)¹². This means network architectures shift from vertical integration (each network delivers a unique application) to horizontal integration with a single network supporting a multitude of uses.

Figure 1 – Evolution of Technology



From purpose built to a network for any purpose

2

The corollary of this de-layering of the industry is that existing business models will no longer work. Until now, all fixed and mobile networks have cross-subsidised the costs of building access from usage revenues. Every fixed and mobile network has relied on cross-subsidies from calls to help fund the cost of providing access. This has made access affordable to all users while the largest users pay more. Wholesale broadband will be different because this kind of service cross-subsidy is not possible:

- The cross-subsidy worked for networks when calls and access were joined in supply and demand. But UFB providers are supplying only a wholesale access service and do not have access to a cross-service subsidy. This means the access has to pay its own way.
- Even if UFB providers were allowed to provide retail services, this may fail because the service cross-subsidy is being eroded by changes in industry structure. Customers can take services from companies like Skype and Google without either the customer's telecoms provider or RSP deriving any benefit.

The experience of the last decade is that no exciting new services have emerged that can be delivered only by the network owner. Many new services now exist independent of network owners – Google and Netflix good examples.

¹² Figure 1 was devised by Bob James; now a consultant at Nokia Siemens Networks

All this implies that a wholesale access service has to fund itself – and still be affordable. This is the “Goldilocks” pricing conundrum – making prices high enough to justify investment but low enough to be affordable¹³.

To make these large investments viable while making access both self-funding and affordable depends upon reaching economies of scale **and** a new pricing model:

- Fixed broadband networks are largely fixed cost networks so high utilisation reduces average costs. The Government wants 99 per cent of New Zealanders able to access broadband at peak speeds of at least 50 Mbps. We do not know what share of the market may be taken by non-UFB providers such as wireless, which could reduce utilisation and increase unit costs.
- Wholesale providers also need a pricing model that funds the expansion of network capacity required for the increase in traffic caused by You Tube, Netflix and others. The affordability and funding requirements point to a two-part tariff with a low monthly rental and a traffic charge; as explained below.

The goal should be to make fixed broadband another utility network like electricity and water. It’s already hard to tell the difference between electricity, gas, water and broadband pipes. They all have the same distribution (tree and branch) architecture, the same dominating cost of civil works (poles or ditches) and the same economics. Two networks double the cost, but not the revenues.

4 Broadband utility model

Adoption and use are the next goals after the current coverage objective to enable 99 per cent of New Zealanders able to access broadband at peak speeds of at least 50 Mbps. Adoption and use are what generate the national benefits of productivity, investment, growth and social inclusion. And with a utility model for fixed broadband, that is achievable.

We expect every house in our street to be connected to electricity, gas and water because they are useful, affordable and allow users to regulate their bills by using only what they need or can afford. Consumer broadband is not yet in this situation. But the UFB networks could get it there; subject to reaching economies of scale and adopting a new wholesale access pricing model.

Competition is based around control of the customer access and carriage service. But that is changing. The progressive migration of all communications traffic to IP will change the nature of competition. Competition will shift to developing solutions for customers and away from supplying carriage, which will become the plain utility service.

Until now, regulatory policy focused on what might drive competition at the

¹³ See John de Ridder, *Goldilocks pricing for broadband*, Telecommunications Journal of Australia, Vol. 58, No. 1, May 2008 published by Monash University ePress

infrastructure level, rather than on how we can cooperate on infrastructure in order to create the shared foundations for competition at higher layers of the network – the levels that make a real difference to end users and the development of the digital economy. But UFB will enable that because the local fibre monopolies will provide the common, regulated, fixed access monopoly service used by RSPs.

Less competition at the infrastructure level lowers prices, increases adoption and so increases the markets for new applications and uses that can be delivered independently of networks. A little less competition at the infrastructure level generates much more service competition where it counts!¹⁴

UFB should be regulated like any other network utility. With the pricing framework suggested in the next section and a regulated asset base, pricing regulation can be very simple – a revenue cap model in which UFB providers would be making frequent downward adjustments to the access price per GB of traffic since traffic is growing fast (and may get faster with a ubiquitous, full speed access networks).

5 Pricing a utility

Pricing access to broadband as a utility will increase adoption and use which will transform economic and social relations.

New Zealand currently has flat fixed monthly wholesale charges for copper¹⁵ and fibre. But a utility usually has a fixed monthly charge and a volumetric charge. A two-part tariff is especially important for a wholesale-only service provider whose growth options are limited – once all customers are connected only upgrades to higher cost and speed lines grow revenues without increasing prices.

On the subject of flat rate pricing, residential dark fibre would be a significant issue for the UFB providers as there is neither usage nor upgrade (speed) revenue growth. The companies would effectively become simply construction companies.

End users are reluctant to spend more to upgrade to higher speeds when content and applications do not yet require higher speed and speeds cannot be guaranteed:

- In Australia the NBN found¹⁶ that only 16 percent of end users are buying the top-end NBN 100/40 Mbps service with most choosing 12/1 or 25/5 Mbps; not much different from ADSL2+.

¹⁴ Bob James and John de Ridder, *Broadband policy is on track – or why we need infrastructure for competition, not competition for infrastructure*, in the AFR, 3 May 2008

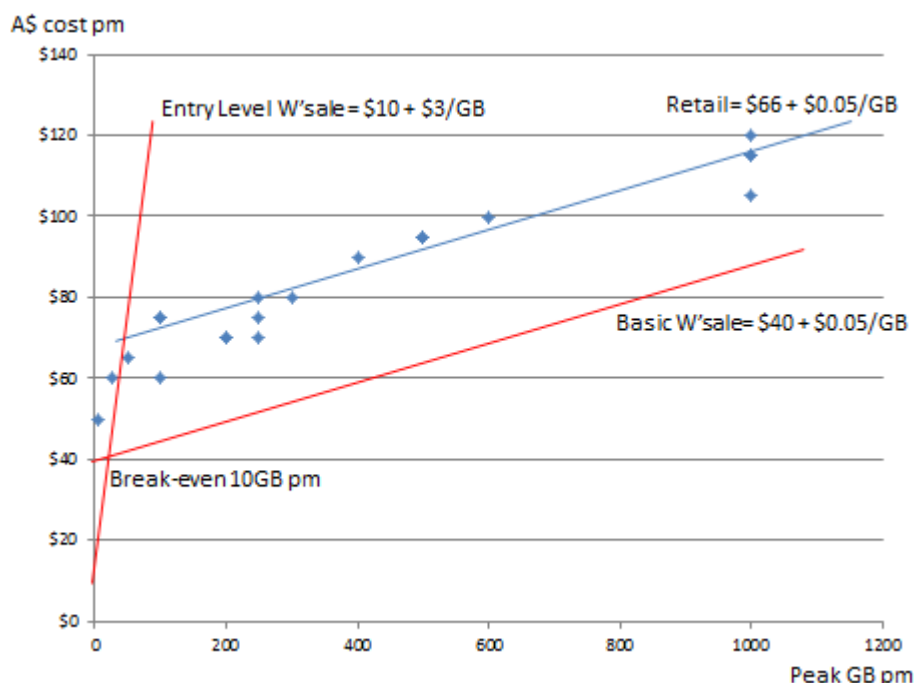
¹⁵ From December 2015, the maximum monthly rental prices that Chorus can charge for its unbundled copper local loop (UCLL) and unbundled bitstream access (UBA) service for the first year are \$29.75 and \$11.44 per month respectively – a total of \$41.19 for the bundled line.

¹⁶ Talk at CommsDay Wholesale & Datacentre Summit, July 2016 at <http://www.slideshare.net/CommsDay/commsday-wholesale-datacentre-summit-2016-nbn>

- In New Zealand, MyRepublic has just announced¹⁷ that customers in three LFC areas will be upgraded from 200/100Mbps to 1,000/500Mbps for no extra cost. This is the same approach used by mobile operators upgrading their networks.

There is a wholesale broadband pricing model that allows not only full-speed to be turned on for all users on immediately but also enables affordable entry pricing; without pre-empting the design of retail broadband plans. This approach is a game-changer.

Figure 2 - Australian ADSL2+ and NBN 25/5 market at September 2015



It starts with Figure 2 describing the state of retail pricing as a “best fit” line on a scattergram showing the plan price per month (including telephone line) against the peak monthly download. The blue dots show higher plan fees are associated with a higher monthly data cap¹⁸. So, the slope of the line is the implicit average cents/GB (prices are in A\$) and the intercept is the average fixed monthly fee.

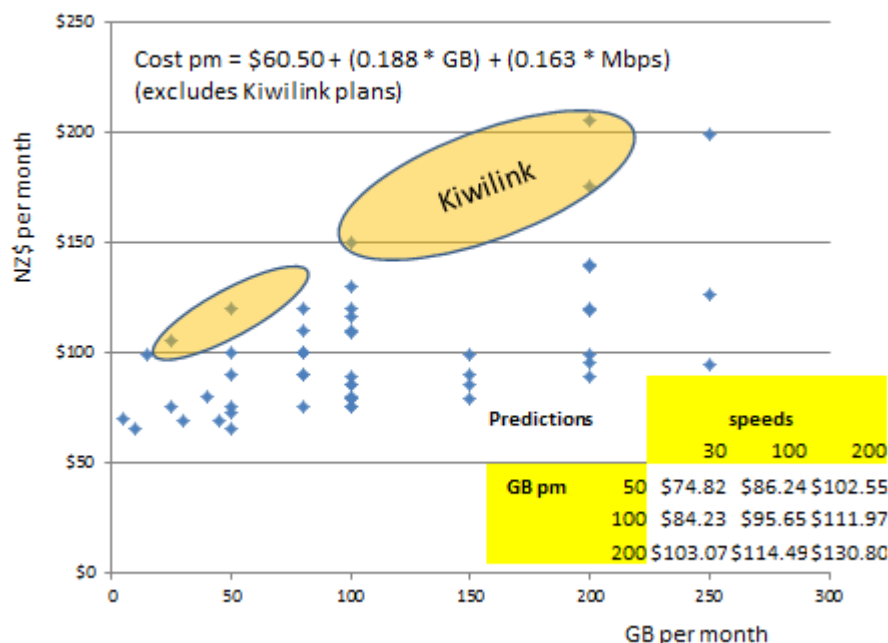
I have done a similar analysis for the New Zealand market for plans listed 23 August 2016 at <http://ufb.org.nz/pricing-plans/>. The scatter in Figure 3 is wider because different speeds are included. The equation towards the top of the figure shows how both the GB per month and speed drive the retail cost per month. At the bottom right of the chart are predictions from the equation for different combinations of data and speed. The actual retail rates for Spark are about NZ\$6 higher than predicted; which probably reflects a brand premium. Assuming 200GB pm usage, Spark’s two unlimited plans implicitly cost

¹⁷ <https://myrepublic.net/nz/gigabit-fibre-broadband/> NZ\$59.99 pm for the first six months then NZ\$119.99 pm with unlimited data.

¹⁸ The blue dots show ADSL2+ and NBN 25/5 retail plans for the top RSPs: BigPond, TPG, Optus and iiNet. Unlimited data plans cannot be included in the scattergram. But deducting the estimated fixed fee from the fee for an unlimited plan and dividing by an assumed usage yields the implicit cents per GB.

about 17 cents/GB. Spark and Vodafone dominate the retail broadband market in New Zealand.

Figure 3 – New Zealand UFB plans at August 2016



Returning to Figure 2 to explain how the broadband market should reflect the retail market, wholesale broadband pricing is placed below and parallel (same price per GB) to the retail broadband market. This is the indicative “Basic Wholesale” price shown in Figure 2 as \$40/line pm and 5 cents per GB¹⁹. Currently²⁰, the minimum wholesale cost on the NBN is A\$24 pm (for 12/1 Mbps); which is high place to start from for affordable retail pricing. It needs to be halved to get affordable voice services on the NBN.

Figure 2 also shows an “Entry Level” wholesale price of A20/line pm and A\$2/GB; which translates into a retail price of just under A\$23 pm after a 30 percent markup and GST. It would be suitable retail plan for both entry-level and voice-only customers; but encourages adoption and use of broadband as customers are then more likely to migrate to higher use retail plans. The scheme administers itself because only low data usage users will take an entry level plan and their service provider will shift the wholesale tariff to the standard tariff when usage grows beyond the breakeven point – and, hopefully, move the end user to a new retail plan with lower data costs too²¹.

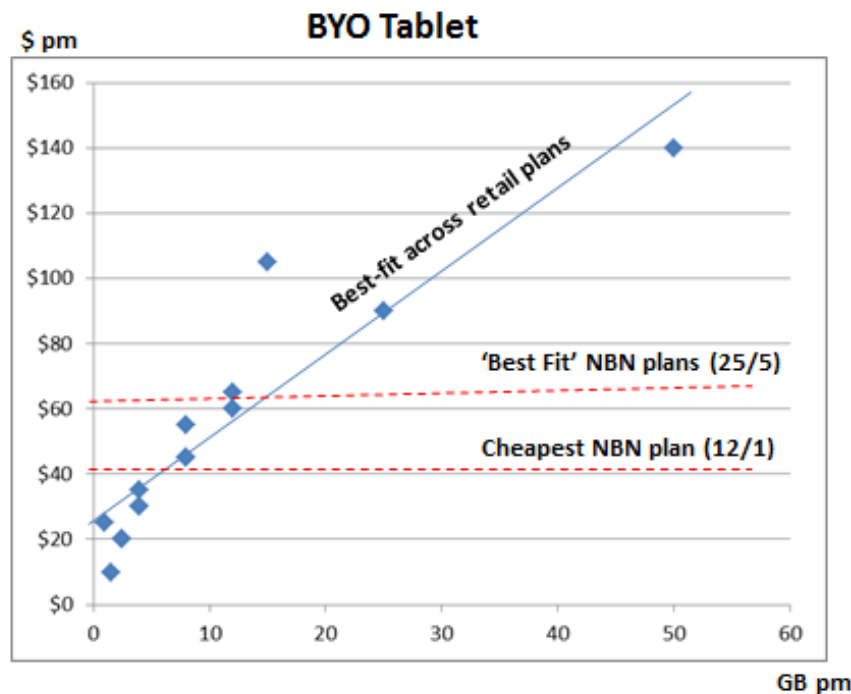
¹⁹ When I first looked at market pricing in 2008, the implicit retail price per GB was A\$1/GB.

²⁰ http://www.nbnco.com.au/content/dam/nbnco2/documents/sfaa-wba2-product-catalogue-price-list_20150201.pdf

²¹ There is an extended discussion of options for ensuring affordable broadband in my paper for ACCAN last year at <http://deridder.com.au/site/wp-content/uploads/2014/05/ACCAN-USO.pdf>

In practice, wireless is becoming the de-facto affordable broadband option. Based again on Australian data at September 2015, mobile was cheaper than the fixed NBN up to 15 GB pm. But, mobile broadband has lost some ground with TPG's entry level NBN plan

at around \$40 pm (see chart).



This may be only a temporary respite for the NBN as the cost and speed of mobile broadband improve and free WiFi services are extended.

To recap the benefits of a two part wholesale tariff:

1. There is no price volatility; the only question is how fast access usage prices fall due to the increase in data volumes and regulatory revenue constraints
2. Having a usage charge allows the fixed tariff to be lower (more affordable) and reduces the cross-subsidy from low to high usage end-users that would result from relying on fixed fees.
3. This revenue model is self-funding: as data grows so does the capacity to augment the network to meet demand (i.e. prices fall a little less to fund expansion). Much of the angst behind the “Net Neutrality” debate in the USA was sparked by network owners complaining that increased costs without increased revenues are imposed upon them by services like Google and YouTube.
4. With the two-part pricing model suggested above, UFB providers have every incentive to encourage use of their access networks; especially as they have no legacy retail revenues to defend.
5. Employing the suggested pricing model, high-speed broadband access is the default option (no pricing for speed). This will encourage investment in backhaul and improved consumer PCs and other devices. Increased speed increases innovation and investment.

5.1 Canada

The two-part pricing model has been implemented in utilities for many years and more recently for wholesale telecommunications in Canada and Australia – but not yet in the way proposed in this submission.

The regulator (CRTC) noted in a 2011 decision²² that all parties supported a two part tariff. The issue was how usage should be charged: volume (traffic) based versus capacity based models.

The Bell Companies wanted to apply volumetric pricing for fibre-to-the-node based on total traffic generated by an RSP's customers in a month. The cable companies supported a similar approach.

However, MTS Allstream (an RSP) proposed a capacity model similar to that used by the NBN in Australia. It initially proposed to sell capacity at 100, 400 and 1,000 Mbps but the CRTC amended this to 100 Mbps increments - as the NBN does up to 1,000 Mbps.

Smaller operators represented by the Canadian Network Operators Consortium (CANOC) objected to the volume based model on the basis that peak network capacity drives network investment decisions whereas a volume based model would charge for both peak and off-peak traffic.

The CRTC accepted CANOC's argument and noted that the correlation between volume and peak traffic can change so that a total traffic might over or under-estimate costs. It also believed that volume-based billing would lead to disputes regarding billing reconciliation. It concluded that since it is impractical to link peak traffic to investment decisions at all points in the network, a capacity based model is:

"more consistent than a volume-based model with respect to how network providers plan and build their own networks and estimate their own usage costs"

Neither of these objections applies in the context of a UFB network which is not built to peak capacity but built by filling trenches with fibre once and for all. And, measuring traffic passed across the point of interconnect should not be a problem.

5.2 Australia

As noted, Australia also took the two-part tariff approach for NBN wholesale pricing. The fee for the fixed part (the AVC or access virtual circuit) varies by speed and the volumetric part is charged by capacity (the CVC or concentrating virtual circuit). The

²² <http://www.crtc.gc.ca/eng/archive/2011/2011-703.htm> and <http://www.crtc.gc.ca/eng/archive/2011/2011-704.htm>

NBN's pricing model has been under sustained criticism; especially for its usage (CVC) component²³.

The idea behind the AVC speed tiers is to price up the demand curve. The problem with it is that end users are reluctant to pay for speed; as the NBN is finding out. Mobile operators do not charge for speed. It costs no more to provide 100 Mbps than 12 Mbps. Why ration speed? If the default is, say, 100Mbps or even the best available unconstrained speed then traffic would soar and innovation would flourish.

Although the CVC is priced is like a backhaul product, it is not. In the words of the NBN, the CVC is a "*pricing construct*". Exactly - just like any two-part utility tariff except that it is unnecessarily complicated. A simple charge per GB would be better and more like any other utility.

The current capacity (CVC) pricing has created several problems.

First, it invites wholesale customers to degrade the experience of customers using the access network. The NBN sees virtue in this: "*The nice thing about the CVC dimension-based discounting is that it allows each RSP to create their own value proposition. Just like we have today in the market: some that will provide a quality experience and dimension more, others that will be a lower cost provider and have more contention.*" (NBN Chief Customer Officer, John Simon in August 2016).

Wholesale customers will have other parts of their network where they can choose to increase contention. But a wholesale broadband access network should not introduce contention by the choice of pricing construct. It would not happen with pricing per GB.

Second, it reduces competition. Because the CVC is bought in blocks of capacity, it presents a scale problem for new entrants by making them buy large increments of capacity (CVCs) before they can serve the first customer in any area. It is discriminatory²⁴. By the same token, it has led to consolidation of existing wholesale customers: TPG commented that its takeover of iinet would make it "*well positioned to deliver scale benefits in an NBN environment*".

Charging per GB instead would make both elements of a two-part wholesale pricing model variable allowing new entrants to serve the whole market easily.

Third, several RSPs in Australia consider that the level of CVC pricing is too high; especially as video content becomes more important. With reluctance, the NBN has reduced the initial price which was set at \$20/mbps. But, it is nowhere near the \$1/mbps needed to get the cost of provisioning 8mbps per user (reflecting "*a world where real*

²³ Critiques of its July 2014 and November 2015 consultation papers at <http://deridder.com.au/site/wp-content/uploads/2014/08/Economuse-2014-08-14.pdf> and <http://deridder.com.au/site/wp-content/uploads/2015/12/Economuse-2015-11-30.pdf>

²⁴ The ACCC offered five responses to the issue of price discrimination which are reported and rebutted at <http://deridder.com.au/files/CVC-%20Final%20Word.pdf>

time HD video cab consumed at home every night”) to under \$10/user per month; about the cost of on-line video subscriptions.

The NBN’s current method of dribbling out cuts in CVC prices is not tied explicitly to growth in traffic. However, the unit price per GB could fall with the growth in data to adhere to the revenue cap. The real problem in Australia is that the NBN is priced below cost and can draw on previously forgone revenue (the ICRA) to exceed the cap in any year. It is very reluctant to cut any prices.

The current AVC and CVC pricing reflect what we had before with the copper network. The AVC charge serves to limit the native peak speed of the new broadband networks and the CVC charge means that the throughput is artificially constrained in the access network to provide cheaper service. The current pricing paradigm creates unnecessary scarcity.