

Entry Level Pricing for Fixed Broadband¹

The National Broadband Network (NBN) needs an entry level retail price that encourages take-up and use the network. Without such a plan, there will be around 250,000 fewer broadband customers.

Ubiquitous and affordable broadband will help achieve the economic and social benefits expected of the NBN and reduce the unit cost per customer making it more generally affordable. The focus of this paper is on low-income affordability to achieve these goals.

The paper builds on a previous paper² on wholesale pricing. Five key issues are discussed:

1. How do NBN wholesale prices flow through to retail broadband prices?
2. Can we set a benchmark for what is “affordable”?
3. The Entry Level Plan and the Standard Plan
4. How does mobile broadband constrain fixed broadband pricing?
5. Australian customers’ needs – some scenarios

1. The Mark-up

It is retail pricing that affects affordability, so we need to link wholesale pricing to retail pricing with the concept of the mark-up which is defined as the difference between the retail price (excluding GST) and the cost of (usually regulated) inputs. This means that with a mark-up of, say, 50% the retailer adds 50 cents for every \$1 of wholesale costs to cover its own costs and make a profit.

1.1 Mark-ups on copper and the NBN

On the copper network, the mark-up is quite large; as shown below for iiNet which uses both unbundled local loop and line-sharing in its business model.

Table 1: Cheapest broadband plans for iiNet on the copper network

		Unbundled Loop (ULLS)	Line Sharing (LSS with WLR)
Retail price:	B'band	\$59.95 (100 GB pm)	\$29.95 (100 GB pm)
	Voice line	nil (VoIP – free local & STD)	\$29.95 (PSTN - 20 cent local calls)
	Total	\$59.95	\$59.90
Less:		ULLS \$16.21	WLR \$22.84
			LSS (+ 8.9 cents/local call) \$1.80
Mark-up after GST (Excluding calls)		\$38.29 (236%)	\$29.81 (121%)

Source: ACCC and iiNet sites, July 2013

¹ This is the author’s version of the work. The definitive version of the work as certified and accepted after peer review has been published in the *Australian Journal of Telecommunications and the Digital Economy* [volume number 1, issue number 1, October/November 2013, paper number 5] and is available from the AJTDE website at telsoc.org

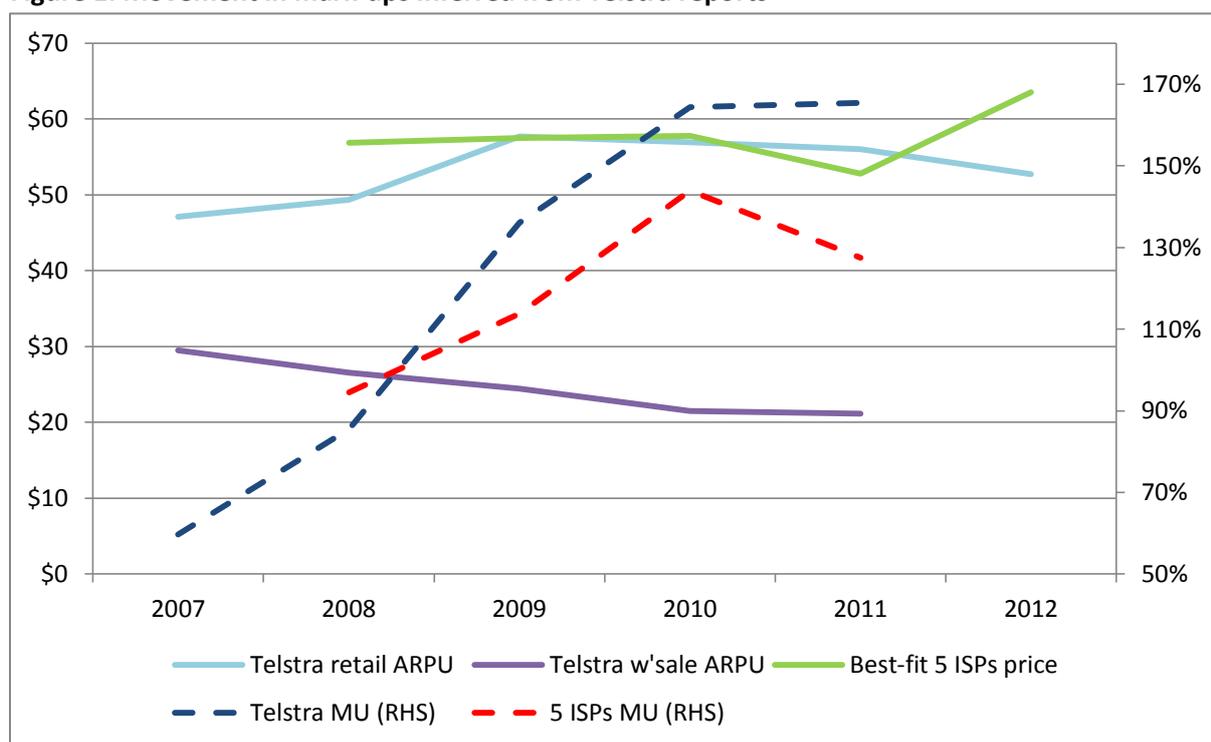
² See de Ridder J. “NBN Pricing should be rejected”, December 2012; at www.deridder.com.au

The mark-ups of 121-236% above are 3 to 9 times higher than the 30-40% mark-ups that Optus claimed would be necessary back in 2008³. The difference appears to be due to either a lessening of competition as the industry consolidates ahead of the NBN or ISPs not passing through reductions in wholesale prices in order to increase their mark-ups ahead of expected increases in wholesale rates needed to pay for a new broadband access network.

The extent of margin growth is illustrated in Figure 1 where the solid blue line shows Telstra’s average revenue⁴ per user (ARPU) for retail and the solid red line shows the typical retail revenue (including GST) for the top 5 ISPs⁵. The dotted blue and red lines show the mark-ups for Telstra and the top 5 ISPs respectively assuming Telstra’s wholesale broadband ARPU (the solid purple line) represents wholesale input costs.

Between 2007 and 2011, wholesale ARPU declined 30% but both Telstra retail ARPU and the top 5 ISPs’ “best fit” price more than doubled so that the mark-up increased dramatically.

Figure 1: Movement in mark-ups inferred from Telstra reports



Source: Telstra Annual Reports, ABS and author’s calculations

In fact, NBN Co. chose not to base its wholesale prices on cost but to match existing wholesale prices; as shown in Table 2.

³ The Age, 18 July 2008 reports Maha Krishnapillai of Optus telling AAP that a high-speed broadband network could cost consumers between \$32.50 and \$105 pm ... with a wholesale rate between \$25 and \$75 pm per customer allowing a return on capital of about 12% pa... Retail prices would be set at 30 to 40 per cent above the wholesale price.

⁴ Revenues reported in Telstra accounts do not include GST.

⁵ This is derived from the “best-fit” across 5 ISPs reported in Table 6 of de Ridder’s December 2012 submission on the SAU and average monthly downloads in each June quarter from the ABS. The GST is taken out before estimating the mark-up shown in the dotted red line.

Table 2: The NBN and current wholesale prices

	Price per month/user	Comments
NBN for 12/1 AVC	\$26 = \$24 (AVC) + \$20/Mbps (CVC)	NBN case studies suggest about \$26 per line
Wholesale (resold) ADSL	= \$24.56 (port) + \$36.08/Mbps (AGVC)	Draft ACCC decision for Zone 1 (metro areas) to June 2014
Unbundled local loop (ULLS)	\$16.21	ACCC decision for Bands 1-2 to June 2014
Line sharing (LSS) plus wholesale line rental	\$24.64 = \$1.80 (LSS) + \$22.84 (WLR) + calls	ACCC decision to June 2014. Combined with local call resale (8.9c/call)

Source: NBN Co. and ACCC

NBN Co.'s decision to price below cost, combined with the ISPs' understanding that costs must be higher with the NBN, could explain why mark-ups on the NBN are higher than a few years ago. The current mark-ups on the retail plans (excluding GST) for NBN's entry-level 12/1 service for some of the major ISPs are shown in Table 3 below⁶. The mark-up in Table 3 averages 142% which is nearly 3 times higher than a few years ago (Figure 1) and more than 3 times higher than what Optus assumed would be the case with the NBN - because wholesale costs are less than expected and ISPs are not prepared to cut mark-ups knowing wholesale prices will have to increase.

Table 3: Current mark-ups on entry-level NBN plans

	Optus	Telstra	iiNet	Internode	TPG
Peak cap	120GB	25GB	20GB	30GB	100GB
\$pm	\$85.00	\$60.00	\$59.90	\$49.95	\$59.98
Mark-up	227%	131%	131%	92%	131%

Source: ISP web sites and author's calculation of mark-up

The true cost of the NBN has been hidden by deferring cost recovery and over-estimating the internal rate of return⁷. Obviously, reducing the cost of the NBN by using fibre-to-the-node (FTTN) instead of fibre-to-the-premise (FTTP) where this will save money would help. But, even more importantly, there must be a reduction in mark-ups; which will only be brought about by increasing actual competition. Such competition will not be forthcoming given the barriers introduced with the current CVC wholesale pricing⁸ approach.

⁶ Wholesale cost of \$26 used (and in Table 2) from NBN Co. case study for 12/1 which cites \$25.82 pm at p33, Product and Pricing overview, December 2010

⁷ See "NBN Comments on ARPU and the ICRA" and "NBN – Internal rate of return" at www.deridder.com.au

⁸ See "CVCs – A final (?) word" at www.deridder.com.au

What should we expect with competition? First, note that the communications world has fundamentally changed. The provision of networks and services are not linked as they used to be. With a fast transparent IP network, all services can be delivered “over-the-top”. An ISP provides connectivity and a tariff including a data cap; but all other value-add can be obtained “over-the-top”. You can easily by-pass the ISP to get an email address, storage, games and video directly from other service providers.

1.2 Mark-ups in electricity retailing

This means that ISPs are increasingly going to look more like electricity retailers; providing connectivity under a tariff. The retail market for providing broadband could become as competitive as that for electricity retailing - once discrimination in favour of large and established players due to CVC pricing is removed.

Victoria has the largest number of active retailers selling to small customers—both for electricity (16) and gas (7)⁹. While other states regulate both wholesale and retail prices, in Victoria retail pricing of both electricity and gas was de-regulated in 2009. Standing offer prices available to all customers have to be published in the Victoria Government Gazette. But 75% of customers take market offers. Both offers include three different tariff options in across five distribution regions; so there are 30 different tariffs for each of the 16 electricity retailers.

In Table 4 below¹⁰, Tier 1 consists of the 3 major retailers: AGL, Energy Australia and Origin Energy. Tier 2 represents larger entrants such as Australian Power & Gas while Tier 3 the rest (e.g. Dodo). The mark-ups on single rate market offers are higher than for the dual rate and time-of-use offers to cover uncertainty in peak and off-peak use. The mark-ups are the simple average across distribution zones.

Table 4: Mark-ups, Victorian electricity, 2013 (%)

	1 st Tier retailer	2 nd Tier retailer	3 rd Tier retailer
Single rate	29.9	28.1	26.5
Dual rate	18.9	16.5	16.3
Time-of-use	21.1	18.0	15.3

Source: Table 2.4, ESC, May 2013

The decline of mark-ups towards those of electricity retailers will be essential to helping offset the likely growth in access costs for consumers. For the purpose of discussing affordability, this paper assumes vigorous competition causes the mark-up to fall to 30% on the NBN.

2. What is affordable?

In 2010-11, 6.2 million households had broadband internet access, according to the Australian Bureau of Statistics¹¹. But, 27% of all households did not have broadband and 46% of households with an annual income under \$40,000 did not have internet access at home.

⁹). Queensland, New South Wales and South Australia each have 11–12 electricity retailers and 3 to 6 gas retailers <http://tinyurl.com/mj32bb4>

¹⁰ Essential Service Commission, Retailer Margins in Victoria’s Electricity Market, Discussion Paper, May 2013

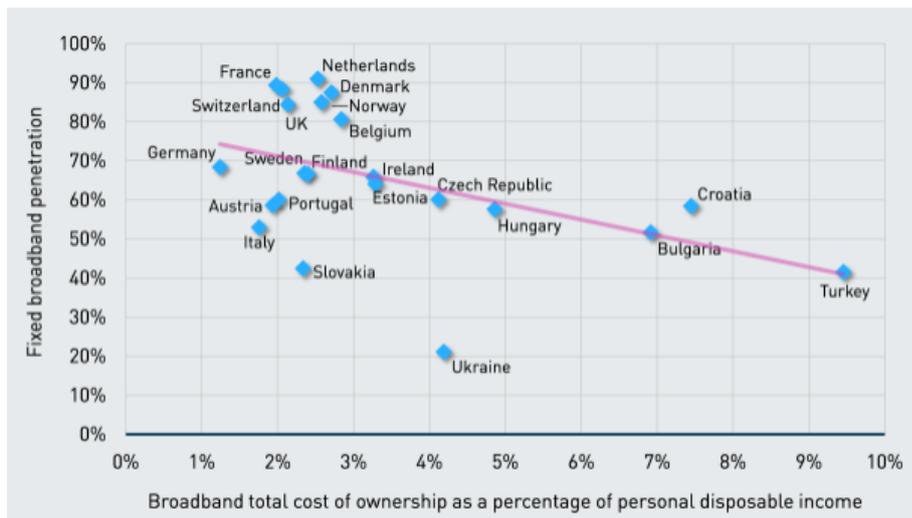
¹¹ ABS Cat 8146, 15 December 2011

The situation is only slightly better in the survey conducted by the World Internet Project which found that 38% of Australian households with less than \$30,000 income (and 42% for households in this group without children at home) did not a fixed broadband connection in 2011.¹²

2.1 Income and affordability

We know that income, PC adoption, education and age affect the take-up of broadband service. We cannot do much about some factors, but we can address affordability because Figure 2¹³ shows about a 4% improvement in take-up for every 1% reduction in the total cost of ownership (i.e. includes more than the broadband plan) expressed as a share of disposable income.

Figure 2: Relationship between affordability and fixed broadband penetration



Source: Analysys Mason, 2013

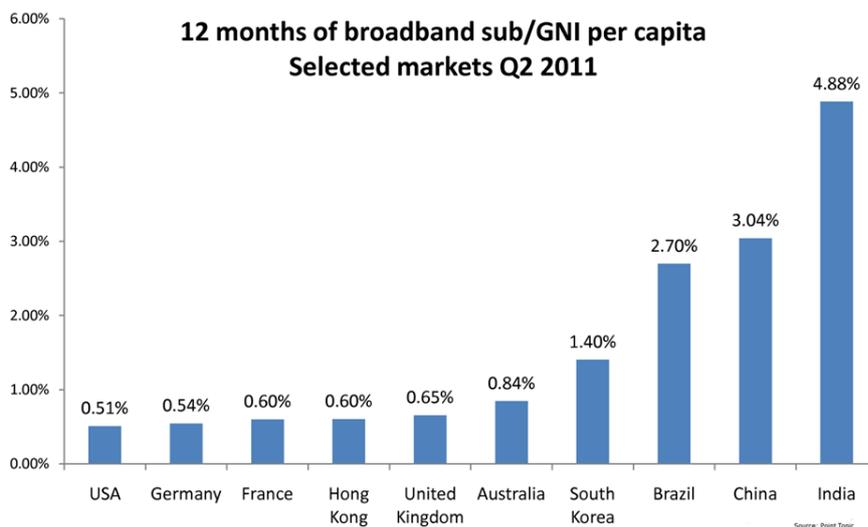
Point Topic takes a similar approach to income in defining affordability. It analysed broadband pricing data in 64 countries to compare the costs of twelve months of service of the most inexpensive form of broadband available - usually the slowest speed. These prices were converted to a "purchasing power parity" (PPP) figure and compared with the gross national income per capita (GNI/capita- also converted to a PPP equivalent)¹⁴.

¹² The ARC Centre of Excellence for Creative Industries and Innovation (CCi) based at Swinburne University of Technology. <http://www.cci.edu.au/projects/digital-futures>

¹³ Analysys Mason, Bridging the digital divide: connecting the unconnected, 8 July 2013 at <http://tinyurl.com/lxog4wt>

¹⁴ The shares of income for Germany, France and the UK are lower than for Figure 2 looks at the total cost of ownership and Figure 3 looks only at the monthly fee for the cheapest broadband plan in the market.

Figure 3: Affordability of the cheapest broadband plan



Source: Point Topic, September 2011 at <http://tinyurl.com/k5563p8>

Australia is shown at **0.84%** on the cheapest broadband plan. But the cheapest entry level retail plan on the NBN from the top five ISPs is currently Internode at \$49.95 which translates to **1.49%**. Using the relationship reported above Figure 2, the difference could lead to about a quarter of a million fewer customers¹⁵.

2.2 Target customers or let them self-select?

If the affordable pricing initiative is targeted, very affordable pricing is possible. Analysys Mason notes that UK statistics show that almost half of the UK's adult population who do not use the Internet live in social housing and are in lower socio-economic groups. In Australia, there are about 350,000 households in social housing¹⁶.

A good example of this approach is provided by Rogers Communications, which last month (June 3) announced¹⁷ that youth living in Toronto community housing would have access to C\$9.99 per month (versus C\$41.9 for the cheapest plan¹⁸) for broadband internet speeds of 3Mbps and usage allowance up to 30 GB. Microsoft Canada and Compugen are supporting the program by providing the option to purchase a computer for \$150.00 that will come pre-loaded with complimentary software along with access to technical support. The C\$9.99 translates to just **0.3%** on the Point Topic measure¹⁹.

¹⁵ $(1.49 - 0.84) * 4 * 9m$ households

¹⁶ ABS Cat 4102 shows 3.9% of households in public housing in 2010.
<http://www.abs.gov.au/ausstats/abs@.nsf/mf/4102.0>

¹⁷ Rogers Communications, 13 June 2013 at <http://tinyurl.com/lm335ms>

¹⁸ LITE home internet gives 8Mbps/256Kbps and 20GBpm
<http://www.rogers.com/web/link/hispeedBrowseFlowDefaultPlans>

¹⁹ Canadian GNI is C\$39,710

Another local example of assistance targeted to users in social housing is that provided by infoboxchange in Melbourne²⁰. For \$15 pm, the user gets a 256Kbps service with 15GB pm. This translates into **0.45%** on the Point Topic measure²¹.

Other targeting options are possible as shown in Table 5 giving insight into low-income affordability and take-up by source of income support²².

Table 5: Deprivation by income source, 2010

	All	Age Pension	Disability Support Pension	Parenting Payment	Newstart Allowance
No. recipients 2010-11		2,158,000	793,000	440,000	513,000
No Internet at home	5.6%	12.5%	24.5%	26.3%	22.2%
No mobile phone	2.4%	8.1%	16.7%	5.3%	0%
No telephone	2.9%	0.4%	14.6%	21.1%	17.7%

Sources: ACOSS and Morsillo from a PEMA survey

The importance of mobile phones to youth is striking.

To rank well globally for affordable broadband, the entry level plan would need to drop from the present **1.49%** of GNI/capita to around **0.5%**. Instead of trying to quarantine the entry level plan to a target group (e.g. low income households), it is possible to simply establish an affordable entry level for all households designed such that many will move up to other plans as they use more.

3. The NBN Wholesale Plans

Before introducing the proposed wholesale Entry Level Plan, we discuss the rationale for the proposed wholesale prices (the “Traffic Model”) and the Standard Plan.

3.1 The Standard Plan

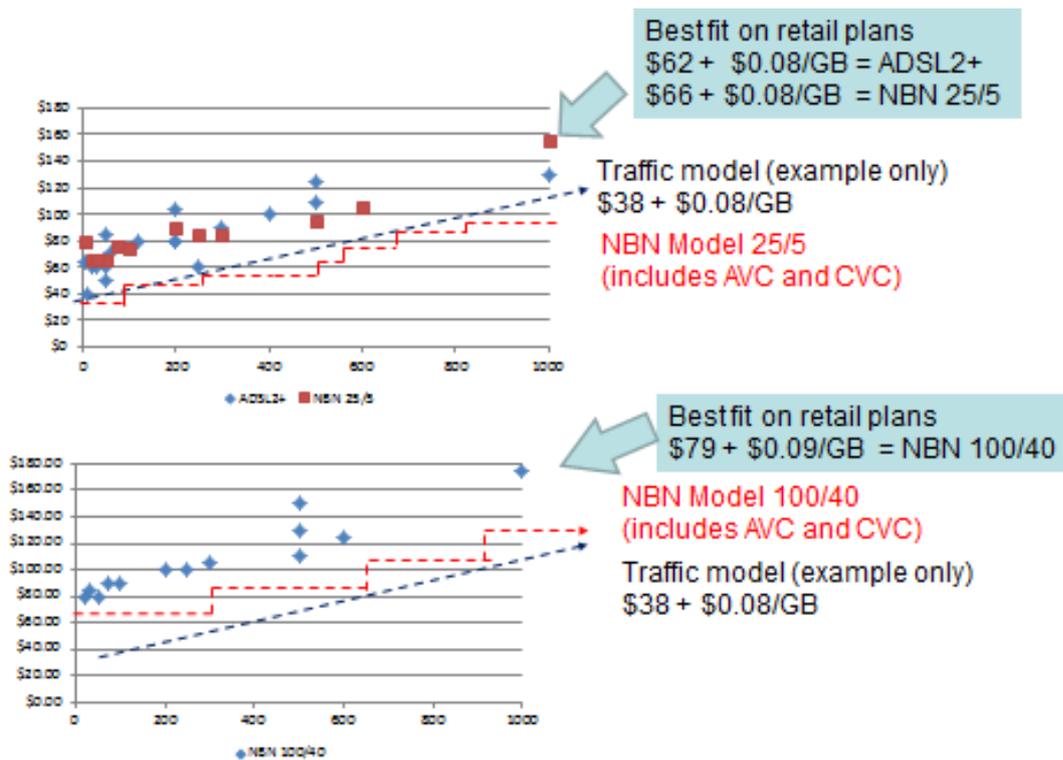
The Standard NBN wholesale plan is designed to support existing retail pricing in the broadband market, as illustrated below.

²⁰ <http://www.digitalinclusion.net.au/>

²¹ The Point Topic measure is relative to national GNI per capita. Obviously, the percentage is higher relative to the incomes of the target group. Australia’s GNI is \$40,270 pa

²² The first line is from page 7 of “Who is missing out”, ACOSS Paper Number 187, March 2012 at http://acoss.org.au/images/uploads/Missing_Out_2012_ACOSS.pdf and the rest is taken from Table 1 “Affordable broadband for all Australians”, 2012, by Robert Morsillo and published in the *Telecommunications Journal of Australia*, Volume 62, Number 5.

Figure 4: Retail Broadband Plans at September 2012



Source: Figure 5 in de Ridder’s Submission to the ACCC on the SAU, December 2012

The dots in the upper chart below show ADSL2+ (blue) and NBN 25/5 (red) retail broadband plans. The “best-fit” (regression) lines have not been drawn but are reported in the blue box. This box says that a typical NBN 25/5 retail plan costs \$66 pm plus 8 cents a GB. In practice, the customer pays a flat fee per month which includes a data-cap. So, for a 50GB plan the best-fit line predicts a price of \$70 pm.

Note that NBN Co has set tariffs so that the retail plans for the NBN 25/5 service and ADSL2+ plans are very similar in order to encourage migration to the NBN.

To support the retail plans, wholesale prices have to be parallel to and below the “best fit” line through retail plans²³. These have been drawn for the Traffic Model and for NBN Co.’s pricing.

The same Traffic Model wholesale price line has been added to the lower chart showing retail prices for NBN 100/40 service as blue dots. The vertical gap between the Traffic Model and best-fit line for retail plans is \$41 compared with \$24 to \$28 on the upper chart; because the Traffic Model does not charge more for speed.

NBN Co.’s Corporate Plan shows that it expects over half of new customers to opt for the cheapest 12/1 speed plan initially but the proportion remaining on that entry level speed option remains over one third by 2028. The only incentive to switch to higher speeds (more expensive AVCs) is said to

²³ NBN Co. current wholesale prices are also shown in red. The step changes are due to CVC pricing.

come from new applications requiring higher speed; yet the NBN Co business plan forecasts most staying on lower speeds. Are the applications unattractive, or unaffordable to most?

The Traffic Model (i.e. both Standard and Entry Level wholesale pricing) bestows unconstrained speeds on all customers because the experience in Australia and overseas is that few users are prepared to pay the premium for speed forced on retail prices by current NBN wholesale pricing. The introduction of FTTP in Japan at higher prices than ADSL is a case study.

The rational reason for this reluctance to pay for speed is that the experience of two customers, one on FTTP and another on FTTN, will often be identical – limited by the server rather than access. The Netflix speed measurements of ISPs and their access networks in the USA support this view.

Australians will upgrade fixed or mobile plans to get more gigabytes. Gigabytes consumed is a good measure of value like litres of water and megajoules of gas and kilowatt hours of electricity. The combination of the Traffic Model (or usage model from consumer perspective) and an NBN that bestows the highest available speed on all customers ensures that all pay for what is delivered at the same price, but speed is never needlessly withheld from the majority to extract more dollars from a few.

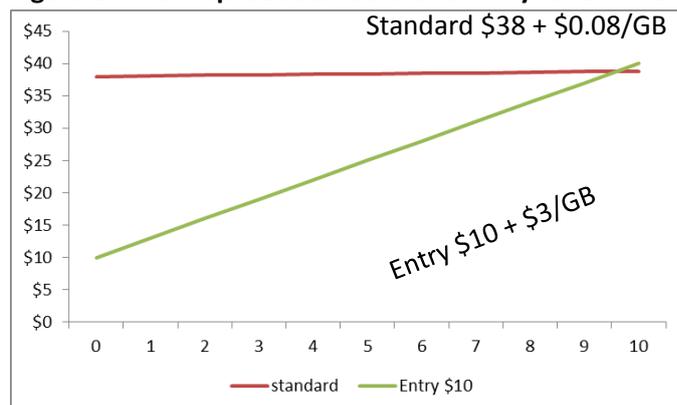


3.2 The Entry level Plan

The proposed Standard NBN wholesale price of \$38 + \$0.08/GB has to be complemented by an Entry Level Plan to ensure that broadband is affordable for those on low incomes or simply with low needs (e.g. voice only). It is desirable to have a plan that does not rely on pre-qualification (e.g. the customer has to be a social housing tenant) but administers itself and which all of the top 5 ISPs will wish to provide so that affordable broadband really is readily available where broadband is normally sold. This can be accomplished with an entry level wholesale price of \$10/month plus \$3/GB. This is much cheaper than the current NBN wholesale prices which start at \$24/month for 12/1 service.

As can be seen below, once usage exceeds 9.6GBper month, the wholesale customer will move the line from the Entry to the Standard wholesale plan to save money – and, hopefully, those savings will be passed on to the end customer.

Figure 5: The Proposed Standard and Entry Level Wholesale Plans



Source: the authors

Assuming a 30% retail mark-up and 1GB pm usage, the retail cost of the Entry Level plan would be \$18.59 pm after GST or **0.55%** on the Point Topic metric. This should hit the sweet spot for those with little income or experience. It is possible due to the low cost of connecting premises in the FTTN footprint but should also be available to those connected by fibre, wireless or satellite consistent with a philosophy of maximising the benefits for all of Australian users regardless of income level, place of residence or technology used.

According to the World Internet Project’s Australian survey mentioned in Section 2 above, only 62% considered their service to be affordable in 2011, 14% are paying \$30 or less for their connection and around 20% said they would “probably” or “definitely” not connect to the NBN when it was available.

The low-cost Entry Level Plan obviously helps in the broader context of the total cost of ownership. Table 6 is reproduced from the paper by Robert Morsillo²⁴ with substitution by the proposed Entry Level Plan in red.

Table 6: The total cost of ownership – options for low income households

	NBN+PC (new)		NBN+PC (recon)		Wireless+Tablet	Pre-paid Mobile
Device	937		220		679	99
Software	63				31.47	
NBN/WiFi/SIM	25		25		30	
Internet (\$pm)	49.95	18.59	49.95	18.59	15	30.42
Total 2 year \$pm	92.66	61.30	60.16	28.80	45.85	34.55

Source: Morsillo, 2012

Higher adoption and use due to low entry level prices reduces the average cost per customer. The NBN is a largely a fixed cost so the more end customers there are and the more they use, the lower the unit cost per customer; increasing the potential for affordable prices for all.

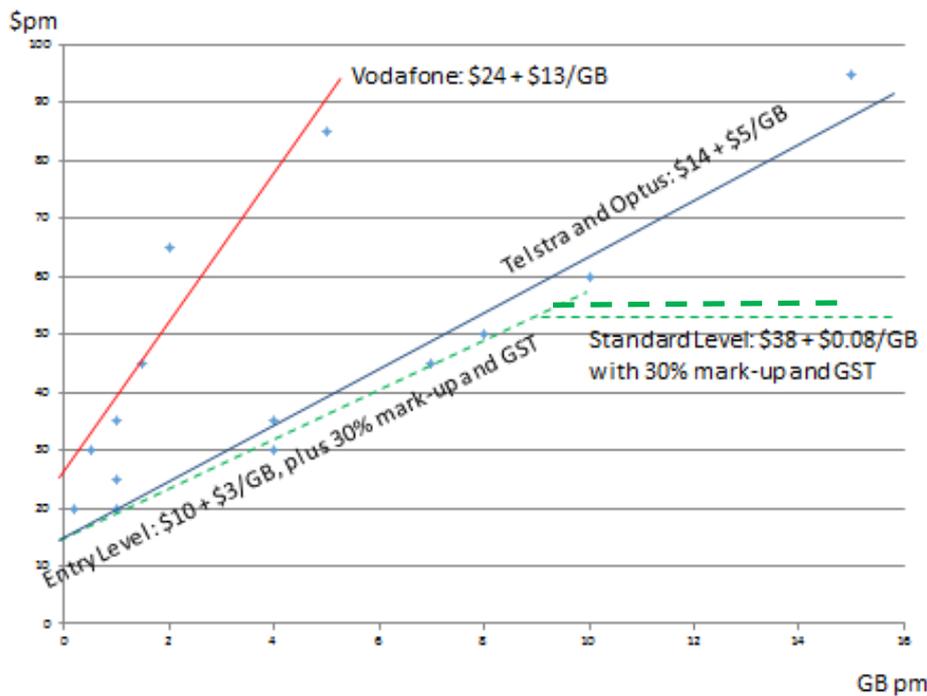
4 Mobile competition

The longer it takes to build the NBN, the more attractive mobile broadband will become. For low levels of use, mobile broadband is already competitive with the Entry Level NBN plan. The dots on the following chart show BYO mobile broadband plans for the three main operators²⁵. All the points clustered around the Vodafone “best-fit” belong to Vodafone. The retail plans for Telstra and Optus are all close to the blue line.

²⁴ Morsillo, R, “Broadband affordability in Australia: Looking beyond availability”, in *Telecommunications Journal of Australia*, Vol. 62, Number 5, 2012

²⁵ See Appendix 1 for details of the plans

Figure 6: Mobile broadband and NBN retail prices



Source: Author and web sites

Telstra and Optus plans have a similar implicit GB charge and are competitive with the NBN for low use. Note the NBN Traffic Model's wholesale prices have been marked up by 30% to get retail prices in the above chart.

However, it is likely that the NBN will complement mobile broadband services. It is expected that most households will take multiple mobile broadband services plus a household fixed broadband connection to access cheaper data through home WiFi. We could even expect fixed broadband to be bundled as aggressively as Optus did – briefly – in 2012 with the following advertisement.



The entry level NBN pricing gives low usage customers a viable fixed network alternative to mobile plans should their needs be unusually low or their ability to pay constrained.

Having a similar monthly fee and similar gigabyte charges for entry level fixed broadband and mobile broadband is a means of minimising mobile substitution primarily for price (and not mobility). It also anticipates how fixed and mobile plans might develop with time – monthly fees for places and devices, different gigabyte fees for fixed and mobile usage. Multi-SIM personal Plans, multi-SIM family and business plans and fixed & mobile bundles are already showing how this might evolve.

5 Australian customers' needs

Consider three urban Australian scenarios – a suburban family migrating from an existing ISP to the NBN, a pensioner household without a PC but needing a phone²⁶, and a young couple starting out in a flat.

The **suburban family** will typically want continued growth in speeds but without rises in monthly costs (ARPU). The planned pricing approach minimises cost increases and avoids cost issues on transition to the NBN.

The **pensioner household** will have the option of being connected on a cheaper plan thanks to the economies of a part FTTN network²⁷. Currently, the pensioner pays \$22.95 pm for Telstra's budget telephony plan, 30 cents for local calls and 25 cents/minute for STD calls with a 45 cent flag-fall on each STD call. On the NBN, Telstra's budget voice offer has the same pricing but fewer features than the current voice service (which would not be the case with continued use of copper for voice only service)²⁸.

Telstra still has to pay NBN Co. \$24 plus CVC charges to support voice only services on the NBN. Under our proposed Entry Level plan, the wholesale charge will be only \$10 + \$3/GB.

The plan brings the option to start using broadband at no initial incremental cost – just pay for what is used on the increasingly standard smartphone or smart TV. A PC or tablet might come later.

The **young couple** will already have mobiles and will have to choose whether to increase their individual plans for mobile broadband or take an Entry or Standard fixed plan. A significant number will use only their mobile, but the lower entry level price with gigabyte prices that are better than cellular will make cost a minor part of their decision making and encourage more to take fixed services.

Conclusion

Attractive entry level retail pricing is important to the achieving the ubiquity of take-up and stimulation of use that lead to the economic and social outcomes expected of the NBN. Apart from promoting digital inclusion, the proposed pricing will also see Australia soar in the global delivered speed rankings because unconstrained speeds can be delivered to all customers.

John de Ridder and Robert (Bob) James

August 2013

²⁶ There were 282,000 customers still on dial-up at Dec 2012; down from 463,000 a year earlier.

²⁷ Telstra is obliged to provide an affordable voice service on the NBN – see http://www.dbcde.gov.au/telephone_services/information_for_people_with_special_needs

²⁸ <http://telstra.com.au/customer-terms/home-family/services-on-the-nbn/>

Appendix 1: Mobile data plans

Mobile Bband Plans					
Telstra BYO		Vodafone BYO		Optus BYO	
\$	GB	\$	GB	\$	GB
25	1	20	0.2	20	1
35	4	30	0.5	30	4
50	8	35	1	45	7
95	15	45	1.5	60	10
excess at \$10/GB		65	2		
\$5.05	per GB	85	5	\$4.50	per GB
\$15.93		\$13.19	per GB	\$14.00	
		\$24.24			

Data Packs					
Telstra	GB	Vodafone	GB	Optus	GB
\$5.00	0.25	\$10.00	1	\$10.00	0.3
\$15.00	1	\$20.00	2.5	\$30.00	1
\$30.00	3	\$30.00	4	\$40.00	3
\$60.00	8			\$50.00	4
\$6.82	per GB	\$6.67	per GB	\$80.00	8
				\$130.00	15
				\$7.70	per GB

Source: web sites