



NBN non-commercial services costing and funding options

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Executive summary

The Australian Government has asked the Department of Communication's Bureau of Communications Research (BCR) to consider economically sound ways to fund the rollout of the NBN to regional Australia.

Specifically, and as recommended by the Vertigan Report, the Terms of Reference ask the BCR to assess the non-commercial losses expected from building and operating satellite and fixed wireless services and consider options for funding these losses via contributions from owners of high-speed broadband access networks.

Vodafone believes that as NBN completes its rollout and becomes the pre-eminent broadband infrastructure across Australia it must not recreate serious market distortions. Similarly the policies surrounding the NBN must not continue the practice of protecting the dominant retail player from competition.

The Vertigan Report quite rightly pointed out that the NBN project should not distort facilities based competition where it has potential to flourish and this was perhaps the main driver for this BCR review. As well as ensuring economically efficient outcomes in metropolitan Australia, Vodafone believes that this BCR review must also carefully assess how the funding of uneconomic NBN infrastructure plays an effective role in promoting fixed and mobile competition in regional Australia.

In Vodafone's view, previous policy and regulatory decisions have failed to deliver the optimal outcome for regional consumers. Australia has one of the most distorted regional telecommunications markets in the OECD with very limited effective competition in regional Australia for both fixed and mobile services. This results in less choice, higher prices and less telecommunication investment.

The importance of finding the optimal policy approach to address the regional competition problem cannot be overstated. The NBN is intended to deliver a national broadband solution that will optimise competition across Australia. As well as ensuring adequate open access infrastructure across the continent, there is an acknowledgement that there must be some form of cross funding to uneconomic infrastructure in regional Australia.

With this in mind, Vodafone believes that there are three key policy decisions that must be made to avoid the policy mistakes of the past:

1. The costing of the non-commercial services on the NBN should be recovered using transparent cross subsidy arrangements and it is crucial that these costs are not overstated. Non-commercial services should be costed on an incremental or avoidable basis. It would be a flawed and counter-productive regime that allowed non-economic areas to be costed and cross-subsidised on a fully allocated basis.

2. The arrangement by which services are funded in non-commercial areas should distort decisions as little as possible and not act as a roadblock to competition.
3. The NBN is essentially the 'Universal Infrastructure Provider' and because of this any arrangements to fund NBN's uneconomic area must fit within the broader context of the Universal Service Obligation (USO) scheme. The USO was designed to provide equitable access to fixed telephone services but is now outdated with the rollout of the NBN. It is clear that the existing universal service and funding arrangements need to be replaced by new arrangements for the NBN. This is indeed the easiest path for reform in this area.

1 Introduction

1.1 The BCR's discussion paper and the overall objectives

The BCR notes that it is seeking input from the telecommunications industry and all other interested stakeholders, on the approach used to:

- a. Quantify the losses from NBN non-commercial services, and
- b. Develop transparent funding arrangements that support competitive market outcomes.

In our view, this is an important step in achieving the objectives set out in the Vertigan Review and subsequent government policy.

The new policy, if implemented effectively, will facilitate the emergence of competitive supply of services in lower-cost areas where this is consistent with fully-funding the obligations of NBN Co. to provide uncommercial services. In doing so, the benefits of competition could provide significant advantages:

- By keeping the prices for services closer to costs in commercial areas, allocative efficiencies should result.
- Competition should provide ongoing advantages in providing strong incentives for cost efficiencies (technical or productive efficiency).
- Competition can also better promote dynamic efficiency, driven by innovative approaches to service delivery.

We therefore strongly support the policy of making the subsidies transparent. We further support the transparent approach to subsidy estimation that is being followed by the BCR. However, we have some remaining concerns that the Government has an interest both as the policy maker but also as the owner of NBN Co. It is critical to the confidence of private investors that there is some independence in the setting of the level of the subsidies, and that the new arrangements reflect the promotion of good policy rather than commercial interests.

1.2 Structure of our submission

Frontier Economics has been engaged by Vodafone to help produce our submission to the Bureau of Communications Research (BCR) on the arrangements for non-commercial services on the National Broadband Network (NBN).

There are three issues on which we provide comment:

- The first issue is the costing of the non-commercial services on the NBN, which are to be recovered using transparent cross subsidy arrangements.

- The second issue is how the cross subsidy is to be funded; that is, what is the form of the funding arrangement by which services are funded in non-commercial areas.
- The third issue is how the proposed arrangements fit within the broader context of the current Universal Service Obligation (USO) scheme which we argue is outdated with the rollout of the NBN.

2 Costing of non-commercial services

2.1 The BCR should first consider the appropriate objectives of costing

In its discussion of 'costing' non-commercial services, the BCR refers broadly to three methods of costing:

- Stand-alone costs (SAC)
- Marginal (or incremental) costs (IC)
- Costs measured on a 'more commercially focused' basis, which are then defined to include common costs. This is known as fully allocated costs (FAC).

The BCR states its view that measuring costs on a more commercially focused basis is appropriate for assessing NBN non-commercial services. However, the BCR provides no justification for this view, or a strong economic case for what it should be trying to measure. In our view, an understanding of the objectives is paramount to developing a suitable costing approach.

From other parts of the paper (Section 2), it is evident that the objective of costing the 'non-commercial' services¹ is to increase transparency and to increase contestability. Costing approaches should be assessed against how well they achieve these objectives.

On the issue of transparency, there seems little to choose between different costing approaches so long as sufficient data is published to support the particular costing method.

On the issue of contestability, our understanding is that the intention is:

- In those areas where competition may be feasible (lower cost areas), the subsidy/tax should ensure that end users choose services on the basis of relative efficiency of providers rather than on advantages or disadvantages caused by different cost burdens from serving high cost areas.

¹ As an aside, we note that it also seems plausible that there would be non-commercial areas in the fixed network footprint – implying that there may be cross-subsidies here as well.

- In those areas where competition may not be feasible, the subsidy/tax should ensure that service providers that deliver the service are the most efficient suppliers of that service.

2.2 The appropriate cost standard is incremental cost, not fully allocated or stand-alone costs

Given the Government’s intention, to measure the cost of non-commercial areas it is clear that the only appropriate cost standard is incremental cost, or the largely-synonymous avoidable cost.

Using a fully allocated or stand alone cost standard for uncommercial areas would mean that in the commercial areas:

- NBN Co. could sustainably recover the incremental costs of serving customers plus the remainder of common costs (e.g. corporate overheads) that are not recovered in non-commercial areas
- Other suppliers would need to recover their own incremental costs, plus pay a contribution to the common costs of NBN Co. in serving non-commercial areas – costs which these other suppliers would also incur in serving commercial areas.

It can be readily shown that this can lead to situations where end users choose services from NBN Co. even where it is the less efficient provider. Using FAC to calculate costs therefore undermines the notion of contestability.

Consider the following example, which has two parts reflecting the high cost and low cost areas (“loss making” and “profitable” areas).

The incremental costs of serving the high cost area are \$10 per line, while the fully allocated (or stand-alone) costs are \$13. Revenue of \$5 per line are earned, giving losses of \$8 against fully allocated costs but only \$5 against incremental costs.

This information is summarised in Table 1.

Table 1 High cost areas

High cost areas	\$ per line
Incremental cost of supply	10
Fully allocated cost (or SAC)	13
Revenue	5
Loss (FAC)	-8
Loss (IC)	-5

In contrast, suppose the incremental costs of serving the low cost area for the incumbent is \$5 per line, and for an entrant it would be \$3.² Then it is

² If there is no difference in the incremental costs, or the costs are higher for the entrant, then the results are trivial as no entry is likely under either cost standard.

straightforward to show (as in Table 2) that calculating a subsidy and levying this on firms supplying in low cost areas (as appears to be the government’s preferred policy) will only achieve the objective of contestability if an incremental cost standard is used.

Table 2 Low cost areas

Low cost areas	\$ per line NBN Co	\$ per line Competitor
Incremental costs of supply	5	3
Revenue	10	10
Incremental costs + IC tax from high cost areas (\$5)	10	8
Incremental costs + FAC tax from high cost areas (\$8)	13	11

Here we can see that NBN Co. can sustainably supply the services at a price above \$10 and below \$11 per line, while a competitor facing an \$8 per line tax can only supply the service at a price of no less than \$11. This is even though it would be \$2 per line more efficient for the competitor to supply the service and pay the \$5 tax or levy.

In the high cost areas, it might be expected that calculating subsidies using net losses based on FAC or SAC would encourage entry into contestable areas. However, there would be no guarantee that the entry that did occur would be on the basis of relative efficiency. That is because the costs calculated in the high cost areas would include an allocation of common costs (or all common costs in the case of SAC) which might be unnecessary for cost recovery. Again, it is the firm that has the lowest incremental costs that should serve the high cost area for the policy to be socially optimal.

Consequently, we find no support in economics for the BCR’s proposed approach which is based on fully allocated costs or what it terms ‘commercial costs’. If that is the costing approach adopted, it will mean that other suppliers of fixed line services in low cost areas would have to be more efficient than NBN Co. to compete, and would lead to over-payments in the sense that NBN Co. would be prepared to provide the non-commercial services for less compensation.³

2.3 Incremental costs can be approximated just as easily as fully allocated costs

The BCR does not provide reasons for why it prefers the allocation of common costs to the non-commercial services, although the Terms of Reference appear to direct the BCR to use this approach. This makes it difficult to comment on the perceived benefits of the fully-allocated approach.

The BCR does note that activity based costing is an accepted accounting method and common way of fully allocating cost. It may be that it is an accepted

³ A point also made by the Bureau of Industry Economics in its paper *Issues in Infrastructure Pricing*, Research Report 69, August 1995, p. 36.

accounting method, but it is measuring the wrong thing. It is therefore hard to see that this is an advantage over the incremental cost method.

One reason to prefer the use of fully allocated costs might be if they were simpler to calculate than incremental costs. Yet we know that in general this will not be true. There is a long literature focusing on the 'non uniqueness' of common cost allocation⁴ and the irrelevancy of fully allocated costs for economic decision-making because it does not compare the profits to be earned with and without the service being supplied.⁵

To be clear, we are not arguing for a move to 'forward looking' incremental costing implying some kind of optimisation or updating of replacement costs as was applied for many years in Australian regulatory pricing disputes. Rather, the incremental cost of supplying services can be approximated by using the same accounting data or forecast data that the BCR proposes to use for FAC estimates.

We suggest that it would be more productive for the BCR to classify the likely costs to be incurred by NBN Co. in non-commercial areas as incremental or avoidable costs, or common costs. This might also require some consideration of scale effects, i.e. some costs which appear common costs might be avoided if no services were provided in the non-commercial areas. This process will undoubtedly prove difficult and be subject to criticism. But so is common cost allocation, and at least this would be an attempt to measure the right thing. There is a higher probability of the best answer being found than if a fully allocated cost approach is pursued, which is wrong in principle and which will disadvantage new entrants and ultimately consumers in commercial areas.

2.4 Consideration should be given to the efficiency and prudence of expenditure

A key issue in the debate about the current Universal Service Obligation (USO) is how to ensure that the desired outcomes are provided at the lowest feasible cost and in the most efficient manner. The profound change in the telecommunications market in recent years has resulted in newer forms of technology able to provide high quality, equitable access to voice and data services in regional Australia.

An analogous argument also applies here to the provision of services in high cost areas. It seems plausible that mobile broadband services provided over commercial networks in rural and regional areas will continue to improve over the next few years. What safeguards are in place to ensure that NBN Co.'s costs recovered from consumers are 'efficient costs'?

⁴ "FDC subsumes different procedures producing widely differing results; any illusion of uniqueness must be quashed." See D. Heald, "Contrasting Approaches to the Problem of Cross Subsidy", *Management Accounting Research*, 7, 53-72.

⁵ Baumol has produced a number of papers on this topic. See e.g. W. Baumol, M. F. Koehn, and R. D. Willig. "How Arbitrary is 'Arbitrary'? or Toward the Deserved Demise of Full Cost Allocation," *Public Utilities Fortnightly*, 3 September 1987, p. 16.

Substitution could mean that NBN Co. is left with a substantial loss which it will be allowed to recover from other fixed line suppliers in commercial areas. This will increase the size of distortions in the lower cost areas – fewer services consumed, less competition and more substitution to other services even when inefficient.

Perhaps most importantly, it also means that NBN Co. has little incentive to minimise its losses in non-commercial areas. These costs will be recovered from users in commercial areas.

2.5 The time period modelled should match the life of assets

The BCR notes that consideration is required regarding the relevant timeframe for examining the cost and revenue projections. The BCR expresses a preliminary view that it will model non-commercial losses over the NBN Co. business case to FY2040, as contemplated under its Special Access Undertaking (SAU).

The BCR does raise the possibility of other options, including a shorter period to 2022, over which more detailed forecasts are available, and a longer period involving the use of terminal values.

Surprisingly, the BCR does not raise the possibility of aligning the modelling with the expected asset lives. In principle, this approach seems better than aligning with the SAU timing as the relevant non-commercial assets will have expired asset lives (with the useful life of satellites between 15 to 18 years and the fixed wireless network possibly having a similar life).

The advantage of this approach is while we have very little idea of what replacement assets will cost in 15 years, there is far more certainty about what costs have already been incurred.

One possible reason to consider the period to 2040 is that this is the period over which NBN Co. proposes to 'break even' under its SAU. This might be relevant if the losses from non-commercial areas could not be recovered in commercial areas over a shorter period than the SAU (whether because of commercial constraints or constraints imposed by the SAU). However, it seems neither efficient nor equitable to impose a tax on users in 2035 for infrastructure that was built in 2012 and expired in 2030. This is quite different from fixed line infrastructure which does have asset lives that in many instances extend beyond 2040.

2.6 Discounted cash flows, discount rates and terminal values

We understand that the BCR proposes to use a discounted cash flow (DCF) analysis to derive a net present value of the loss in non-commercial areas. We have no particular issue with this approach, as it better accords with the nature of the business than a building block model (these models are better suited to businesses in a steady state with the number of users neither contracting nor rapidly expanding).

Nonetheless, there are two important inputs into the DCF which are likely to affect the valuation of the loss; (1) the discount rate, and (2) whether any terminal value is adopted at the end of the modelling period to reflecting the ongoing value of the business.

Discount rates

Selection of a discount rate is a highly controversial field in both regulatory economics and in policy-making circles.

The difficulty in the choice of rate is that the government's ability to finance projects at low costs favours a lower discount rate, but the project's opportunity cost should also be accounted for. Harrison (2010) concludes that:

Market rates reflect the opportunity cost of investing in public projects, and there is no case for allocating resources to low return investments when higher returns are available.⁶

Discount rates should embody an appropriate compensation for risk. The rate should be equal to the rate of return on private projects with similar levels of risk.⁷

As the BCR notes, a number of different discount rates have been used to assess NBN Co.'s commercial projections – falling in the range between 8.0% and 10%.⁸

There are four points to make about the BCR's quoted figures.

The first point is that it includes two irrelevant consideration points – being Telstra's discount rates applied to the NBN deal and the TUSMA/USO deal. That is, these discount rates were used to value the revenues (and costs) flowing to Telstra under these deals – not the value to NBN Co.

The second point is that it is not clear that the Implementation Study is relevant for the current analysis. We note that the Government was quoted as saying the following about the determination of a discount rate by the Implementation Study:

The Study has explicitly not used a discount rate to evaluate project returns. The Study has however made use of a discount rate to evaluate capex and opex tradeoffs in the build and to calculate the terminal value of the discounted cashflows at the point of privatisation. A 9% discount rate was used to inform this specific analysis but the Study has explicitly not assumed that this rate is the WACC of the project.⁹

⁶ Harrison, M. 2010, Valuing the Future: the social discount rate in cost-benefit analysis, Visiting Researcher Paper, Productivity Commission, Canberra, p.2.

⁷ Ibid.

⁸ BCR, p. 22.

⁹ Senate Select Committee On The National Broadband Network: Questions on notice for DCITA, 2010

The third point is that the discount rates are not expressed in comparable terms. That is, it is unclear whether they are real or nominal, or post-tax or pre-tax returns. They must be converted to similar returns to make comparisons between them.

The fourth point is that there is also another data point which should be considered – the regulatory WACC applying to NBN Co. The particular formulation of risk free rate plus 350 basis points (in a Vanilla WACC formulation) implies that the correct rate for discounting current costs and revenues for NBN Co.’s overall business is around 6 per cent nominal (with tax taken into account directly in the building block model).

It is clear that if one is to use market rates for discount rates, then these market rates should vary with changes in risk free rates – which have fallen since all of the BCR’s quoted estimates were produced.¹⁰ This is shown in Table 3.

Table 3 Relevant discount rates

Source	Quoted discount rate	Basis of preparation	Comparison discount rate Nominal, post tax, using 2015 nominal risk free rate	Comparison discount rate Real pre tax using 2015 real risk free rate
Implementation study (2011)	9%	Nominal	-	-
Vertigan cost benefit analysis (2014)	8.3%	Real, pre tax	7.1%	5.7%
NBN Co SAU	Risk free rate + 350bp	Nominal vanilla WACC	6.0%	~5.0% ¹¹

Source: Frontier adjustments, Vertigan cost benefit analysis (2014), Value Advisors Associates (2011), IPART (2014)

We conclude that a rate that is somewhat below the rates mentioned by the BCR would be currently appropriate – between 6.0 and 7.1 per cent nominal, post tax. If the preference is to use a real pre-tax discount rate, the relevant range is between (around) 5.0 and 5.7 per cent.¹² Over time, these rates would be expected to change with market conditions.

Terminal values

The BCR points out that part of a DCF analysis is the consideration of what value to attach the business at the conclusion of the modelling period.

There are three issues that we can see with the use of a terminal value in the modelling.

¹⁰ We note that there are some arguments to suggest that lower risk free rates are associated with an increase in the market risk premium, so that the fall in the overall rate is reduced.

¹¹ There is imprecision relating to the NBN Co SAU estimate because the WACC is expressed as an aggregate mark-up over the risk free rate, rather than separated into cost of equity and cost of debt components.

¹² See footnote 11.

The first issue is that the use of a terminal value is less relevant the longer the modelling period. In particular, for a modelling period up to 2040, imposing a terminal value seems unnecessary given the discounting unless the terminal value is very large.

The second issue is determining an appropriate basis for the terminal value - assuming one needs to be applied for a short modelling period. In general, we think it would be appropriate to use terminal values that would allow either the recovery of any accumulated (cash flow) losses, or the depreciated value of the assets at the time of calculation (recognising that this would require accounting data). These approaches would be consistent with earning a normal commercial return, whereas approaches like the '6x EBITDA' approach have no clear relationship to normal economic returns. This raises the risk that the subsidy will be set too high.

The third issue is that the terminal value will be very sensitive to the position reached prior to the terminal value being applied (which will obviously be more important the shorter is the modelling period). This will require careful scrutiny and the use of sensitivity analysis to check the overall reasonableness of the estimates.

2.7 Revenues and other intangible benefits

The BCR indicates that it will rely on NBN Co.'s revenue forecasts to derive estimates of future losses. While this approach may increase incentives to minimise losses, it will also give NBN Co. an incentive to under-forecast revenues in high cost areas. This incentive will be minimised if the BCR uses a 'true up' by updating its model to include actual revenues and brings any over-recovery to bear in future periods. There is an important trade-off here that should not be overlooked – use of forecasts drives greater efficiencies but also can create a false impression of losses.

A further issue relating to revenues and benefits from provision of non-commercial services more broadly is the degree of benefit to which the USO provider gets from being the provider of services in all areas. That is, there are some positive effects on the current or future financial performance of NBN Co. to providing broadband services in non-commercial areas.

We note that the Hon. Paul Fletcher MP has recently raised this issue in relation to the USO:

One of the other problems with the formula initially used to determine Telstra's USO costs – costs which were then recovered across the industry – was that it disregarded the benefits that Telstra may obtain from being the universal service provider.

These could include economies of scale and scope and, of course, the brand benefits which come from being seen as the ubiquitous provider of telecommunication services.

The behaviour of incumbents in other countries suggests that these benefits are real and well recognised.¹³

These benefits are equally applicable to NBN Co. and should have the impact of reducing the net cost of the subsidy arrangements. The major source of these benefits is likely to be brand advantages (as the national network provider) and economies of scope across networks – which are captured in the commercial service areas as lower costs or higher revenues.

We recognise that such benefits will be difficult to quantify – and indeed do not appear to have been considered in the latest round of USO considerations in 2011.

That said:

- Historical estimates of the benefits to Telstra are available and suggest that the benefits are material – merely updating Ovum’s estimate from 2000 suggests benefits of between \$124 and \$210 million.¹⁴
- There are examples in other jurisdictions where the benefits have been found to be material relative to the obligations. In the UK, BT receives nothing for the universal service provider obligation, reflecting these benefits which in 2004 were valued at around \$120 million.

¹³ <http://www.paulfletcher.com.au/speeches/portfolio-speeches/item/1316-speech-to-the-accan-uso-forum.html>

¹⁴ Ovum, *Calculation of the Intangible Potential Benefits of being the Universal Service Provider A report to the Australian Communications Authority* Final Report, 12th January, 2000. We adjust these figures for average inflation of 3 per cent.

3 Funding arrangements

3.1 Introduction

The BCR seeks feedback on the appropriate funding arrangements for the non-commercial services. The Terms of Reference ask that the BCR provide advice on direct funding arrangements based on industry contributions from high-speed broadband access networks that target residential and small business customers.

The BCR notes that the types of funding arrangements that might be suitable have been widely discussed by bodies including the OECD, ITU and Ofcom, as well as Australian Government agencies. We note that they have also been contentious in Australia – relating to USO funding – over many years.

3.2 Appropriate funding principles

The BCR canvasses some very broad principles in considering funding arrangements, noting the principles of:

- transparency
- economic efficiency
- contestability
- sustainability
- equity

There are a number of elements of these principles that are difficult to achieve, particularly under the quite restrictive constraints set in the Terms of Reference for the BCR. We also note – if only for the record – that pursuing an industry contribution model is likely to sustain many of the problems inherent in the current model of USO funding where payees invariably see the funding provided as ‘tax on competition’ with the non-commercial service provider where that provider also competes in commercial areas.

We limit our comments to two issues:

- The importance of clear funding rules
- Minimising efficiency and equity issues associated with industry contribution models.

3.3 A good funding policy would set the rules clearly

The BCR has proposed that industry funding eligibility should be based on a service standard that would apply to owners of high-speed broadband access networks (with a proposed high-speed broadband speed criteria based on a minimum download speed of 25 Mbps). Although the BCR’s proposed approach would exclude mobile broadband networks, the BCR has left it as a possibility that:

future inclusion of mobile network operators could be considered on the basis of mobile networks operating in competition with fixed line networks primarily resulting in fixed to mobile substitution rather than fixed-mobile complementarity.¹⁵

As the BCR notes: (a) the extent of fixed to mobile substitution is not clear and (b) the full extent of competition and substitution between fixed line and mobile networks may not be known for many years. The BCR wording suggests uncertainty both with respect to whether the mobile broadband networks should be included and, if they should, the timing for the inclusion.

While some flexibility in the funding of the scheme improves its sustainability, it introduces considerable uncertainty for service providers which may at some point compete with NBN Co. For example, mobile operators will continue to invest in new infrastructure to improve service levels, reduce costs and satisfy current and future customers. Creating a potential future liability will have a negative effect on the incentive and degree of investments and innovation in the industry – for every dollar earned some (uncertain) proportion of it will be taken in ‘tax’.

At the margin, businesses either may delay or abandon entirely investments. If the businesses do make investments based on the current proposed funding eligibility criteria, they may be penalised for their actions once the eligibility criteria have been broadened. Penalising investments well after they have been made will both be inefficient and inequitable.

With this in mind, we consider that the BCR will need to consider further how it can set clear rules on: (1) whether the mobile broadband networks will be included; and, if they will, (2) what will trigger their inclusion (e.g. timing, measure of substitutability, etc.). With respect to the timing, if the mobile broadband networks are not included from the onset of the scheme, the BCR should clarify when it intends to revisit this issue (e.g. every 10 years).

3.4 A good policy would minimise investment and usage distortions

The Government has defined the funding arrangements that BCR should consider, limiting them to industry contributions from high-speed broadband access networks that target residential and small business customers.

Acting within the scope of this directive, the BCR seems to be considering two funding options: (1) industry contributions based on qualified revenues; and (2) industry contributions based on market shares. The Terms of Reference allow for other eligibility requirements.

We first wish to note that the restrictions imposed here are disappointing in the broader context that other funding sources would be far less distortionary and provide more funding certainty than the proposed approach. It need not require direct budget funding; as we note in Box 1, the revenue raised from (future)

¹⁵ Bureau of Communications Research, 2015, ‘NBN non-commercial services funding options’, p. 27.

spectrum auctions and licence renewal fees could be directed to fund non-commercial broadband services.

Within the limited options facing the BCR, these are two main points to consider:

- How to minimise the distortions arising from prices in commercial areas being raised above their incremental costs
- How to share the burden of the losses among those eligible to contribute to funding them

Distortions are likely to be larger when the funding sources are narrower, as this will increase NBN Co.'s ability to price above incremental cost in commercial areas (noting that it is under broader regulatory constraints). This will manifest in fewer consumers taking up NBN services, and less competitive entry. These concerns are not trivial. The BCR's figures based on NBN Co.'s fixed wireless and satellite review indicate that even once the NBN is fully operational, the per SIO cross-subsidy will be more than \$10 per customer per month.¹⁶

A further difficult aspect of the proposed funding methods is that they target suppliers of services to consumers and small businesses with services equivalent to NBN fixed line services. In turn, this suggests that the relevant metrics for funding determination should also relate specifically to revenues or profits earned from supplying these services, or numbers of users of these services.

We have considered whether qualified revenues, market shares (based on volumes) or profits earned would create lesser or greater distortion assuming they each could be readily measured. Lesser distortions occur where the contribution method affects marginal incentives to acquire customers the least (most allocatively efficient). We find that volume (market share) and revenue measures feed through to prices more directly are so are likely to be more distortionary than profit-based measures. Revenue measures are also likely to dominate volume measures because service providers will avoid lower revenue customers to minimise contributions.

The further dimensions to consider are the proportionality or affordability of the contribution, the ease of measurement and potentially equity for end users.

The BCR states that one of the issues it will consider when assessing different funding arrangements is 'proportionality' which it takes to mean that:

*the greater contributions should be provided by more established participants that should **better be able to afford** to make the contributions (emphasis added).¹⁷*

Measures based on volume-based market shares do not take account of the earnings associated with those customers acquired – potentially an issue if the profile of customers is quite different from those acquired by NBN Co. Revenues provide a better measure, but in this regard it is inferior to a profit-based measure. Profit based measures are superior because they reflect that entrants will

¹⁶ Based on amortising the initial capital costs over 20 years.

¹⁷ Bureau of Communications Research, 2015, 'NBN non-commercial services funding options', p. 28.

ordinarily find that they will face very high start-up costs and negative cash flows for many years. In that context a further 'tax' in the form of contributions based on volumes or revenues which flow to its major competitor seem likely to dissuade entry. Indeed a profit based funding mechanism has the benefit of being a funding source that comes from economic rents. Given it is fairly clear that one player in particular is extracting significant rents from the Australian telecommunications market this funding approach would deliver a more substantially more efficient outcome.

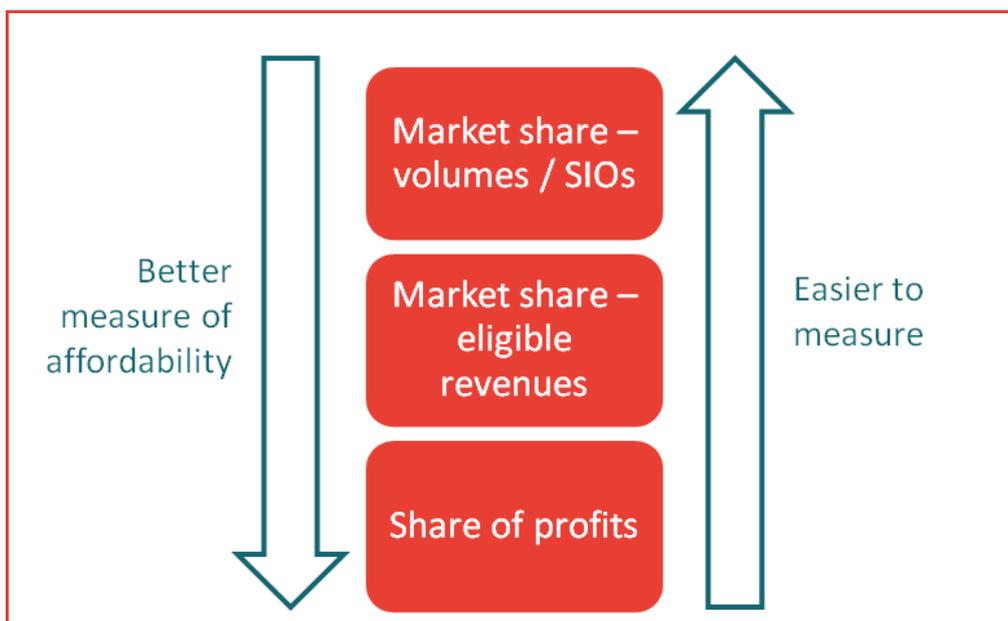
Unfortunately Australian telecommunication regulation has generally favoured expediency over efficiency. SIO-based measures seem the most easy to determine and hardest to distort (e.g. profit hiding) but these concerns should not result in a lack of regulatory effort to deliver the most efficient outcome and often the simplest, one size fits all approaches do not deliver the intended result. We note that the BCR suggested that the number of active services could be used as a criterion. Assuming that the scheme stays limited to fixed lines, the application of this criterion would be straightforward. However, were mobile services to be included this would be an issue given that measurement of SIOs is difficult (and, in particular, whether the SIO is 'active'). Note also that if the levy is distributed uniformly across the end users, this approach may be considered inequitable since the levy burden will be relatively greater on low income users (that is, it is a regressive tax).

An arrangement based on revenues has precedence as it is the funding mechanism for the USO under the Telecommunications Industry Levy (TIL). Eligible revenues are defined as gross telecommunications sales revenue less certain deductions. An issue here would be to determine what revenues are attributable to the target access services for small business and residential users. We believe that the TIL approach has manifestly distorted the market and resulted in a disproportionate amount of funding being provided by the second and third tier payers in the Australian market.

Profit-based measures may provide more difficult again to determine contributions. That is because there are many different relevant measures of profit, and firms may be able to arrange their affairs to limit reported profits if that meant a reduced tax/subsidy burden. Another issue is that there may be no profitable firms and therefore no 'cross subsidy' at all, which raises questions of sustainability. However, the alternative of taxing firms that are not profitable to fund a cross subsidy is also very unappealing.

We summarise this trade off in Figure 1.

Figure 1: Trade-off between affordability and measurement error



Our view is that, on balance, the BCR should pursue a funding approach which determines contributions according to profits earned. This approach is likely to be the least distortionary, be the best indication of a firm's ability to pay, and is more consistent with how other kinds of tax are levied i.e. profits are normally taxed rather than income. Alternatively a combination of a revenue and profit share approach may provide middle ground and is also worthy of consideration.

Box 1: The benefits of using spectrum scarcity fees to fund non-commercial services

While we acknowledge that the BCR is limited in what funding arrangements it can consider, we do believe that there is merit in broadening the array of possible funding options if it can be shown that alternative options are more beneficial to both the industry participants and the end users.

We suggest that the Government should consider an alternative funding arrangement which would use proceeds from spectrum licensing and pricing. The merits of this option are:

- *Efficiency:* The reduced requirement to fund non-commercial services increases allocative efficiency by reducing prices in commercial areas closer to incremental costs. Using some portion of the proceeds to finance the NBN non-commercial services should not have any distortionary effects on investment/usage decisions in the telecom or other industries.
- *Competitive/Technology neutrality:* Since revenues from spectrum sale would have been raised anyway, using a portion of the raised funds to finance the NBN non-commercial services would not discriminate in favour of any company or technology.
- *Equity:* Most other funding arrangements are regressive for end users, while using spectrum fees would not be.
- *Cost effectiveness:* Once a share of the auction proceeds is set aside in a designated Trust Fund, the earning of the fund could be used to finance recurring expenditure associated with the rollout in rural Australia. The administrative costs of managing the fund should be lower than the administrative costs associated with the proposed revenue/market share scheme as there will be no need to calculate each eligible business' contribution share on an annual basis.
- *Certainty:* A substantial amount of money is raised from the telecommunications industry in spectrum licensing¹⁸ which over time would make a significant contribution to covering the costs of rolling NBN to rural Australia (i.e. it would support sustainability of funding arrangement).

Source: Frontier

¹⁸ The auction of 700 MHz and 2.5 GHz bands conducted in early 2013 raised \$2 billion (see: <http://www.acma.gov.au/Industry/Spectrum/Digital-Dividend-700MHz-and-25Gz-Auction/Reallocation/digital-dividend-auction-results>)

4 Maximising the benefits from the cross subsidy scheme

The BCR's considerations around the funding of non-commercial services are tightly constrained by the Terms of Reference. Nonetheless, the BCR notes there is a policy question of whether it would be appropriate over time to combine industry funding arrangements for the delivery of voice and broadband services.

Our view is that it would be prudent to combine the funding arrangements if the eligibility criteria and potential payers are similar. This is likely, but by no means certain, to be the case.

As has recently been noted by the Hon. Paul Fletcher MP, the Government is interested in a broader dialogue about whether there is a case for reforms to the USO.¹⁹ In that light we offer the following comments, which relate to policies that potentially increase the size of the losses from non-commercial services that the BCR is attempting to measure.

4.1 The USO and NBN subsidy schemes should be merged

With the NBN we have the unique opportunity to provide equitable access to voice and internet services using a mix of technologies. The current USO arrangements are both costly and outdated. Each year, the telecommunications industry and Australian taxpayers spend approximately \$300 million on the legacy copper wire network in regional Australia. This is despite these areas being overbuilt by the NBN fixed wireless and satellite networks.

There are many potential benefits to reform of the USO arrangements in combination with the cross-subsidy arrangements and NBN Co.'s role (at least in the short term) of the deliverer of ubiquitous broadband services. It is clear that the Government has established NBN as the long term 'Universal Infrastructure Provider'. Given the USO was set up a funding mechanism to provide subsidies for uneconomic infrastructure it seems obvious that the USO scheme must be brought into the technology agnostic NBN reality.

The most obvious benefit is the capturing of economies of scope, deriving from the ability of existing infrastructure to deliver both data and voice services. Fixed wireless services are more than capable of delivering both kinds of services²⁰, but given the USO is at the same time subsidising the provision of services over the legacy copper network, there is no incentive for NBN Co. to invest for provision of these services.

¹⁹ <http://www.paulfletcher.com.au/speeches/portfolio-speeches/item/1316-speech-to-the-accan-uso-forum.html>

²⁰ The NBN's fixed wireless network is deploying point to point LTE technology that is capable of delivering a Voice over LTE (VoLTE) service. The NBN's satellite network is also capable of delivering a voice service called Traffic Class 1 (TC-1).

The cost savings that are feasible through the economies of scope of a single network and the revenues associated with existing USO subsidies should mean that the extent of losses attributable to the supply of services in non-commercial areas should be reduced.

4.2 There are broader synergies for competition from joint subsidy and USO reform

NBN Co. is spending a lot of money to build infrastructure in rural and regional areas. The BCR's paper suggests negative cash flows in the order of \$10 billion just to 2021. It would be particularly wasteful if we are not able to extract any synergies out of either USO reform or mobile competition from that investment.

The scope of NBN's fixed wireless mandate could be extended to provide wholesale mobile coverage. That would significantly improve the depth of coverage to residences over the more targeted individual coverage of the mobile network operators.

Further, NBN Co. could also provide access to its infrastructure on reasonable terms – such as facilities and backhaul – to facilitate the supply of better mobile services in rural and regional areas. We also believe that a modernisation of the USO scheme could also be used to fund important extensions to the NBN project. For example for relatively small amounts of money NBN Co.'s LTE based fixed wireless network could be also used to improve mobile services in regional Australia. In other words rather than merely focusing on NBN's current infrastructure challenges, a USO style funding mechanism that is separate from the NBN regional/metro cross subsidy would allow for greater government policy flexibility to direct funds to other telecommunications funding priorities (for example an expanded Mobile Black Spot Programme).

Such policies may go some way to addressing competition distortions caused by current policies in these areas, and to reduce the overall funding burden associated with the cross-subsidy arrangements.

