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Report for Telecom New Zealand

Comments on UBA submissions

19 February 2013

Ref: 36106-66

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1 Executive summary

This document has been prepared for Telecom New Zealand. It contains comments on a number of issues raised in submission on the Commerce Commission's recent draft determination on "Unbundled Bitstream Access Service Price Review", specifically:

- the impact of line density
- the impact of a "fibre cap" on copper prices
- the inclusion of countries whose models use FDC/FAC.

2 Comments

2.1 Impact of line density

Chorus sets out a detailed argument to support the view that there is a clear impact of line density and length on the unit costs of UBA. Chorus and its advisors suggest a range of adjustments to reflect these in the benchmarked prices.

An FPP process and its cost model would deal comprehensively with these factors.

In relation to actual networks, the existence of these scale effects is immediately apparent from the fact that in Europe, LLU-based alternative operators cherry pick MDFs with (typically) a minimum of approximately 3000 telephone lines and do not serve smaller MDFs.

The reasons for these local scale economies are twofold:

- There are fixed costs of achieving colocation in an MDF site (including the capital cost of the initial DSLAM and the installation costs of the backhaul leased line); these fixed costs need to be shared over the users in that MDF site and lead to economies of scale.
- There are also likely to be scale effects in relation to the costs of the backhaul link into the aggregation network. Longer links have higher costs; the links are also used by more end users on MDFs with large numbers of DSL customers. We note that to the extent that there are MDFs which are themselves aggregation nodes, these nodes have no backhaul costs.

In the current New Zealand regulatory framework, FPP is available to provide a "first best" estimate of forward-looking costs. In the IPP process, appropriate forward-looking cost-based models from other jurisdictions are used to provide a "second best" estimate for forward-looking costs in New Zealand, and as a low-cost proxy for the outcome of an FPP price determination.

In an FPP price determination process, these factors, combined with a range of other factors and design decisions would be directly reflected in the cost model used.

Care should be taken in adjusting other cost models

Detailed adjustments to one or more of the parameters in cost models built for other jurisdictions increases the risk of introducing errors. Where the adjustments affect the model output significantly, there needs to be careful scrutiny and validation of the results before they can be regarded as being safe for adoption.

We believe that caution is advisable in making adjustments to any aspect of a forward-looking cost model developed and optimised for another jurisdiction, in order to make it look more like an actual network in New Zealand. For example, the Danish model includes multicast services, and it is not obvious how these should be taken into account in deriving a result at the individual MDF level as some of the multicast costs (within the aggregation network) are shared by neighbouring MDFs. There is also some risk of introducing additional error in adjusting another model, or of moving into areas not well scrutinised as part of their national processes (which are by their nature likely to focus on the total costs and the overall unit cost result, rather than the way these costs are distributed across geographies).

A forward-looking cost model suitable for an FPP determination would define the network elements required to deliver the UBA service using a specific technology, within an optimised network layout and architecture, and provisioned appropriately in accordance with forecast demand. In the case of UBA in New Zealand one critical design factor would be the extent of use of cabinet-deployed DSLAMs, and might come to very different conclusions to models for Denmark or another country. There might also be issues relating to historical decisions (path dependence) and, if so, the Commission would need to decide the extent to which the FPP model should take these into account. This selected technology and architecture would then be costed in accordance with the mix of local and non-local inputs (labour, civil engineering costs, equipment and material costs, etc.), and using the local weighted average cost of capital. These costs would then be used to determine an appropriate regulated price based on the modelled costs.

Adjusting for customer density using statistical data needs great care

The CEG appendix to the Chorus submission sets out some of the detail of its approach to making adjustments. In our experience, mapping geo-demographic data compiled for one purpose (such as post code districts or census districts) onto an efficient forward-looking telecoms network configuration needs considerable care, for two reasons:

- The nature of human population distributions is that they are “clumpy” or fractal-like. Data gathered at the wrong area scale can lead to unrealistic conclusions. For example, it may be economic to serve a village with a remote cabinet, but not the large area of farmland around it, which may be totally obscured by average density data gathered at too large an area scale

- Even if the area scales of the data sets are well matched on average, the nature of telecommunications engineering is that the areas served by specific nodes (cabinets or MDFs) do not necessarily correspond to the logical areas on which geo-demographic data is compiled (e.g. census or postcode information). As a result, it is dangerous to compare statistics from one type of geographic tiling (e.g. postcodes or mesh blocks) with another. The data really needs to reflect the actual locations served by the nodes where the electronics are housed (e.g. MDFs or cabinets).

There can be no certainty on the data available that the population density metrics identified by CEG in its appendix to the Chorus submission correctly reflect the scale economies discussed above.

In its analysis of the Danish model, it is also not entirely clear how CEG has linked average DSL lines per DSLAM and the average unit cost of wholesale broadband at the edge router level (which relates to a group of DSLAMs).

Full publication of the data sets and the calculations would allow these points to be checked, and in our view would be a minimum requirement if this approach is to be adopted.

In addition we do not believe that it would be safe to extrapolate Danish model results to values of “lines per MDF” that are beyond the range of the input data (i.e. less dense than the least dense MDFs served in Denmark) because there is no data to justify the extrapolation. If this type of approach is to be used, it would be much better to use results only from within the current range of results of the adjusted model.

In summary, to make the proposed adjustments would be a complex exercise and require the Commission to derive new model input data, review the design of those foreign models, and determine key parameters to use. The simplicity of the IPP benchmarking process has thereby been lost and the resulting geotype-by-geotype benchmark is halfway towards an FPP model.

Ratiometric adjustment

Chorus has proposed as an alternative the use of a “ratiometric” method: in effect the hypothesis of a constant ratio between the price of naked DSL and LLU, which can be benchmarked and then applied to the NZ UCLL price. Unfortunately there’s really no reason for this to be true in general. It is true that there are some cost inputs which follow similar trends (labour and costs of trenching) but, for example, the very fine-scale housing layout which affects the UCLL cost via “trench per house passed” is not correlated in any meaningful way with, for example, the unit costs of electronics for the DSLAM.

We do not believe this approach would be safe for the Commission to use as a method for taking these economies of scale into account.

2.2 The impact of a “fibre cap” on copper prices

Chorus has submitted a report by CEG which demonstrates that:

- As fibre and copper are substitutes (e.g. in providing retail voice and broadband services) the superior performance of fibre will prevent the services provided over copper from rising to a level above the price of services provided over fibre
- Demand for copper loops is falling over time as customers transition to fibre and wireless solutions. This is true whether or not there is s total transition to a fibre network, but if there is a complete transition it is immediately apparent that there is a substantial risk of stranded copper assets
- Due to the substantial common costs in fixed networks, a cost-recovering unit price for copper-based services which did not look forward when setting prices[1] would increase materially as demand falls

[1] Which might be via economic depreciation or via additional supplementary “tilt” in a tilted annuity, depending on the demand trend. We note that a supplementary tilt can only deal with constant percentage changes in demand, not a finite end date.

- This combination of factors (declining demand and a known price and superior performance alternative) means that the NZCC needs to think very carefully about the trajectory of future copper loop prices and the implications for the depreciation method used.

We broadly support this position, but feel that it is worth emphasising that UBA and UCLL are affected differently by these concerns, because:

- Some assets are shared between copper and fibre-based services, and stranding is not an issue for these assets (except to the extent that wireless solutions are preferred by consumers). So this risk of stranding (or low utilisation) as a result of the fibre transition is unlikely to affect:
  - core trench and transmission assets
  - core switching (other than DSL-specific assets such as BRAS)
  - access trench (to the extent that this can be reused)
- UBA-specific asset lifetimes such as DSLAM and BRAS are typically 5–10[2] years – much lower than the lifetimes of the access network assets (typically 20–40 years). The annualised capital costs (depreciation and ROCE) relating to these specific assets are also a fraction of the total UBA costs.

As a result, in our view this issue of a "fibre cap" is likely to have a significantly less material impact on the UBA costs (additional to UCLL) than on the unit cost of UCLL itself.

Should there be an FPP and hence a model for UCLL costs it will be worth considering this point in detail. We note that there are a variety of ways to implement economic depreciation in addition to those considered by CEG, which we have used in past regulatory cost models for European NRAs. In this sense we disagree with CEG, which says: "TSLRIC models typically use a proxy for economic depreciation in the form of a 'tilted annuity'". This is incorrect; there are other methods that are also widely used (for example, many of the Analysys Mason mobile termination cost models use an economic depreciation method with the initial year unit cost based on the NPV of costs divided by the NPV of price-trend weighted demand). Importantly, these forward-looking depreciation methods all involve making assumptions about future levels of demand. This is particularly necessary in the case of UBA in New Zealand as there is a generational migration to FTTH which has already started; a consistent view of the growth of fibre services and decline in UBA services will be required.

Should there be a review of the entire regulatory framework, we expect that the issue of the appropriate pricing principle for regulated access to assets that will not be replaced with similar assets in the future may need to be addressed. There is very relevant ongoing discussion of this issue in Europe (including the recent draft Recommendation from the European Commission, as well as the Plum and CRA reports cited by Enable).

2 One of the asset classes in Denmark – DSLAM chassis – has a 15-year lifetime.

2.3 Inclusion of countries whose models use FDC/FAC

2.3.1 Principles

TSLRIC, the cost standard applied in FPP, requires a forward-looking view of economic costs, including a reasonable mark-up for efficiently incurred common costs. The forward-looking view implies using the costs of modern equivalent assets.

IPP requires a benchmark against "prices in comparable countries using a forward-looking cost-based pricing method".

Top-down models without CCA revaluation (and consequent holding gains/losses) and efficiency adjustments (which will be applied to capital equipment by CCA revaluation, but also need to apply to operating costs) are not forward looking. They are backward looking because they use historical unit costs and asset volumes[3]. In addition, and as is argued by the CEG paper, the depreciation scheme used may need to take into account future changes in demand (and be "forward looking" in this sense). This can be achieved in a variety of ways including the use of demand-change-related supplementary "tilts" in tilted annuities or the use of economic depreciation. Markets where demand is very slowly changing may not need such adjustments to depreciation.

As a result, FDC or FAC models are not in general suitable for use in IPP. We agree with the Commission that "models based on a FDC methodology are not a good proxy for a TSLRIC model".

It is true that some top-down (TD) models using CCA, a forward-looking depreciation scheme, and with efficiency adjustments could be sufficiently forward looking. This is why TD LRIC+ or TD LRAIC+ models can be acceptable for use in IPP. Indeed, the Commission has in the past included data points derived from such models in its IPP in the case of UCLL.[4]

We do not believe that the NZCC should accept data from an FDC or FAC model without applying stringent tests that such revaluation, efficiency adjustments, and depreciation scheme were in place. As such adjustments are costly and time consuming and add considerable complexity to TD models (when compared to, for example, HCA-based models using accounting depreciation), it would be unwise to assume that they must have been undertaken without evidence to that effect.

The CRA report cited by Enable is sadly incorrect in its characterisation of FAC (equivalent to FDC) as "LRIC plus also some proportion of common costs", because it is not derived in this way[5]. It is an allocation of the total costs, derived from accounting data (i.e. top down)[6]. FDC and LRIC+ can be

[3] There is one exception: brand new assets. These are automatically modern and HCA is equal to CCA in the first year.

[4] E.g. by including Czech Republic top-down LRIC data in "Revised draft determination on the benchmarking review for the unbundled copper local loop service", NZCC 4 May 2012.

[5] It is possible that the CRA authors have been considering brand new assets such as fibre, where the difference between FDC and LRIC+ might be negligible. But the statement is still incorrect.

[6] E.g. Defined by Oftel in http://www.ofcom.org.uk/static/archive/oftel/publications/glossary/index.htm as "**Fully Allocated Cost (FAC)** – An accounting approach under which all the costs of the company are distributed between its various products and services. The fully allocated cost of a product or service may therefore include some common costs that are not directly attributable to the service."

very different in the case of, for example, fully depreciated assets that are still in use (when FDC could be lower than LRIC[7]) or where there have been substantial price trends or technological developments.

This is highly relevant to UBA because in the case of UBA, there will be both assets in use that are not new (e.g. core trench), and also assets which have undergone material technological developments (such as DSLAMs moving from ATM to Ethernet, new types of core fibre).

Enable claims that "the Plum Paper reaches a similar conclusion", but we feel this is a misrepresentation: the Plum paper is investigating how to set the price of copper and fibre (i.e. the choice of regulatory pricing framework), not whether FAC is a good approximation to LRIC (indeed it explicitly says that it is not in some circumstances, as we have highlighted above).

FDC is therefore not *per se* a good proxy for TSLRIC, suitable for use in IPP benchmarking. However, in certain circumstances it might be possible to admit an FDC model result if it used CCA, efficiency adjustments, and a sufficiently forward-looking depreciation method (noting that accounting depreciation might be sufficient if demand was constant).

2.3.2 The specific models cited

France

As set out in the ARCEP decision[8], price control in France for FT wholesale broadband residential offers is based on cost accounting only in the non-competitive areas (defined as the area where France Telecom is the only operator with a wholesale broadband offer enabled delivered to subnational destinations for residential customers). It is therefore not directly comparable to UBA in New Zealand, which is offered nationally, and so is not a suitable benchmark.

UK

In addition to being a CCA FAC cost model, Ofcom's model adjusts asset valuations for heavily depreciated assets "reflecting the ongoing economic value of some assets that would otherwise be treated as fully or nearly fully depreciated"[9]. In other words, the asset values are increased, implicitly acknowledging that they are trying to mimic LRIC by adjusting CCA FAC so as to avoid an issue with fully depreciated assets.

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7 Plum agrees "A further problem arises in top down models where assets are approaching or have reached the end of their book lives. In this case the prices generated by top-down CCA models may understate the true economic cost of the assets deployed." Available at http://www.plumconsulting.co.uk/pdfs/Plum_Costing_methodology_and_the_transition_to_next_generation_access_March_2011_Final.pdf

8 Décision n° 2011-0669 en date du 14 juin 2011, ARCEP.

9 WBA Charge Control Charge control framework for WBA Market 1 services, available at http://stakeholders.ofcom.org.uk/binaries/consultations/823069/statement/statement.pdf

However, the Ofcom WBA price control and cost model also only applies to Region 1, a rural subset of the UK in which BT does not face significant competition from operators using LLU and cable modem. It is therefore not directly comparable to UBA in New Zealand which is offered nationally, and not a suitable benchmark.

Spain

The CMT sets prices for wholesale broadband based on a combination of sources:

- top-down cost information from Telefónica, based on the regulatory accounts
- a WIK bottom-up cost model (including the access network)
- a Frontier bottom-up cost model (using the access network costs from the WIK model)
- benchmarking from other countries.

The output of the bottom-up models would certainly appear to be appropriate as benchmarks for New Zealand; these were built and considered by CMT partly because the new service (NEBA) does not have corresponding accounting data. Nevertheless, we note that NEBA may not be as fully rolled out geographically as that of Chorus in New Zealand (and in fact we believe that it is not yet as widely available as the predecessor ADSL services in Spain). On this limited coverage basis therefore it would be wise to be cautious about using NEBA prices (they may be an underestimate as they are more urban).

The top-down proposal from Telefónica appears to have been adjusted by CMT, disallowing a number of costs and adjusting others (e.g. costs for increasing coverage, IT systems, common cost mark-up, WACC). However, its interim price setting decision for NEBA[10] (see section 4.1.5 of that document) instead of being based on this adjustment of the Telefónica proposal or the cost modelling was heavily influenced by both existing values and the benchmark values in other countries, and some of the benchmarks used by CMT (which were: France, Germany, UK, Italy) are (as noted above) not suitable for use here (because the regulated tariffs in those countries are not applicable to the whole area of the country served by DSL).

Accordingly we believe that the July 2012 NEBA prices set by the above document (and currently in force) are not suitable for use as a benchmark.

Bahrain

The model used in Bahrain appears to be a top-down model based on CCA and with some adjustments imposed by the regulator (e.g. MSAN combo port costs). The depreciation method is based on accounting depreciation, which is not ideal as it is not forward looking. However, it might be a potential candidate for an IPP benchmark if just considering the properties of the model.

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10 CMT, Resolución por la cual se acuerda la adopción de una medida provisional relativa a los precios del servicio mayorista de banda ancha de Telefónica S.A.U (NEBA) DT 2011/739 July 2012 (in Spanish).

However, there are material physical differences which may be important to consider. Bahrain is four hundred times smaller than New Zealand, which will make backhaul much less of an issue, and population density is approximately a hundred and twenty times higher than the New Zealand figure, which will undoubtedly lead to better economies of scale at the MDF.

On this basis we suspect that it is not a useful benchmark.