



Unbundled Bitstream Access Service Price Review

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Summary

1. The Government has now announced a wider review of the Telecommunications Act regulatory framework. We do not yet know the specific scope or outcomes of that review, or what amendments are to be made to the Act, if any.
2. Chorus and other local fibre companies have made submissions on possible concerns that the Commission has little, or no, ability to address in the context of narrow s18 considerations required for setting a cost based UBA price. The Government review means that the focus of this UBA price review can now return to the crisp question of what the UBA price should be when set with reference to the benchmark set of prices of bitstream services in comparable countries that set forward-looking cost-based pricing.
3. The submissions raise few additional matters that require changes to the benchmark data set and the Commission should simply confirm its 3 December draft decision.

The Commission should confirm its draft benchmark approach

4. Chorus and Enable propose a number of adjustments to the composition of the benchmark data set and benchmark data. However, the proposed adjustments do not improve the benchmark estimate and incorrectly undermines the methodology applied.
5. Enable suggests that the Commission should add countries that have applied a fully distributed cost (**FDC**) regulatory cost model to the benchmark data set. However, Analysys Mason concludes that FDC models are not in general suitable for use in an IPP exercise. While some FDC models can satisfy the forward-looking cost-based requirements of the Act (depending on their design), such FDC models would need to have taken a forward-looking approach to asset values and efficiency and could not be adopted by the Commission without detailed review. Analysys Mason has reviewed the proposed FDC based benchmark countries and concludes that none are suitable for an IPP benchmarking exercise.
6. Chorus proposes to adjust the underlying benchmarked cost models for potentially low future asset utilisation (or stranding) as customers migrate to fibre based services and customer density. These adjustments are equally problematic and undermine, rather than improve, benchmark costs. For example, UBA is unlikely to be materially impacted by the expected timing of the shift to fibre services as assets such as core transmission and switching are shared between copper and fibre services, and UBA specific assets such as DSLAMs have a relatively short economic life.

7. Chorus' proposed density adjustment also fails to recognise that cost models incorporate a range of dependent design and parameter choices. For example, Chorus propose adjusting a specific input, actual demand at particular modelled nodes, in isolation from a significant number of related model design choices such as efficient node location or equipment modularity. It is simply not possible to reliably adjust benchmark prices in the way proposed by Chorus - these adjustments can only be made in the context of a final pricing review exercise.
8. In any case, the Commission should be very cautious accepting adjustments that result in costs that fall well outside the benchmark range and well above what we know about actual costs in New Zealand.

Submitters raise no new issues that suggest the Commission should depart from implementing the pricing principle in the Act or benchmark data set.

9. Chorus and local fibre companies effectively reiterate section 18 arguments made in the context of the UCLL review. As set out in our submission, section 18 cannot override the clear requirement in the Act for a forward-looking benchmarked UBA price and, given the tightly grouped nature of the benchmark set, there is little discretion to be applied.
10. Enable suggests that section 18 requires the Commission to give proper consideration to the long term benefit of end-users with respect to their transition to and use of fibre. We agree up to a point. We do not suggest that the Commission cannot consider fibre transition within the proper scope of its discretion. However the fact is that an ability to "give proper consideration" to fibre migration does not in the end amount to a license to actually override the express statutory instruction to set a price based on the IPP. Any proposal that it can is an error of law.
11. Further, Enable asserts that section 18(2A) relates to investment in fibre only and not to UCLL or any other type of infrastructure investment. However, this is not supported by the wording of the provision, the Act is phrased in broad, technologically neutral language that does not suggest a preference for any particular technology (such as fibre). From a policy perspective, and in the context of the general philosophical perspective of the statutory scheme of the Act, consumers are best served by competitive processes that do not favour any particular technology or competitor. A good way to test the Chorus and Enable assertions that section 18(2A) is about fibre investment, and no other kind of investment, is to consider how that proposition would play out in the context of some unrelated regulatory process that falls within the scope of the Act.
12. Take for example a hypothetical regulatory process to reconsider MTAS. According to the Enable and Chorus proposition, if the Commission reconsidered MTAS it would have to skew its mobile regulation decision in terms of whatever assisted fibre migration. The Commission would also be obliged to ignore

substantial new investments in LTE networks, relative to fibre investments, despite the fact that these are large scale capital intensive, relevant investments that would fall four square within the actual express wording of section 18(2A). We believe that such an outcome is obviously not intended and therefore the Chorus and Enable proposition must be wrong.

13. In our view the only sensible way to read a purpose statement that applies to **all scenarios where regulation is contemplated**, including those where fibre is simply not in the picture, is that the Commission must consider capital intensive investments on a generic basis, not a fibre specific basis.

Even if the law allowed the Commission to depart from applying the pricing principles in the Act we do not yet have evidence to conclude that a lower UBA price would have any material impact on fibre uptake

14. Chorus and LFCs suggest intuitively that consumers accessing cheaper copper-based broadband services will have a material impact on the uptake of fibre based broadband services. However, we have no evidence of whether, and to what extent, or for which customer segments, this will prove to be true. It would be unsafe for the Commission to base its IPP price on assumptions about future demand and demand drivers which have not been validated. What we do know is that UFB uptake in early years will come from early adopters who place a high value on technology capabilities and are less price sensitive. Beyond that, we cannot predict what customer propensity to pay for fibre services will be – it may well be that sufficient high-bandwidth applications and services develop so as to make price relativities between copper and fibre services irrelevant for a very broad proportion of customers. Similarly, on the supply side we can expect that the capability advantage fibre services enjoy over copper services will increase: there is nothing to stop entry level fibre services significantly increasing peak and committed throughput speeds above those available on UBA services.
15. Against this uncertainty, there is the very real possibility that a high UBA price will divert retail service providers' efforts away from developing new fibre based services.
16. Ultimately, the UFB roll out is at an early stage and it will be a number of years before we know whether (to what extent, and how) the UBA price may impact fibre take up. The Commission should apply the Act and set a cost-based price, and leave questions of whether adjustments to that price and/or pricing methodology are necessary for later, when we can begin to identify whether there is any discernible retarding effect on fibre take-up, and if so what the size of that effect is.
17. Even if it were permitted by the Act to override the pricing principles, the Commission's proper role and mandate is that of responsible market regulator. As such it should be cautious to depart from the efficient competitive pricing

which is generally envisaged by the legislation without a proper evidential basis for doing so.

Proposed adjustments to the benchmark data set

A FDC cost model does not, in itself, imply forward looking costs

18. Enable suggest that the Commission can widen the scope of benchmark cost methodologies to include fully distributed cost (**FDC**) regulatory models. These are also known as fully allocated cost (**FAC**) models.
19. While a FDC model can be constructed to estimate a forward looking cost based price as required by the IPP, this is not to say that all FDC models estimate a forward looking cost-based price. Only those FDC models which specifically address relevant cost issues, a forward looking depreciation scheme and efficiency considerations might be sufficiently forward looking for the purposes of the IPP. Conversely, TSLRIC models embed adjusted accounting-based and economic methodologies that result in a forward looking estimate of cost.
20. Historically, various forms of FDC and FAC models were used by a number of jurisdictions for regulated price setting from the 1960's to the present day. These models were initially top down models based on adjusted incumbent historic cost accounting data, and allocations of joint and common costs, (**TD HC FDC models**). However, criticism of FDC models for regulatory purposes increased through the 1980's and 1990's as various shortcomings began to be recognised and cost estimates from FDC models were increasingly seen to diverge from the economic costs associated with a competitive market.
21. TD HC FDC models typically use more or less arbitrary cost allocations, a wide range of categorisations aligned to fiscal planning rather than economic cost objectives, are subject to attributions which mask service cross-subsidisation, and are at risk of estimating prices which result in higher than competitive returns. Attempts have been made to modify these FDC models to reflect future return on investment, address shortcomings in the allocation of joint and common costs, and address inefficiencies embedded in historic cost assumptions. Nonetheless, even with these modifications, the top-down FDC approach was generally considered still to overstate the cost of providing the defined service. Accordingly, Regulators have increasingly looked to long run marginal cost approaches, such as FL-LRAIC, LRIC(+), TSLRIC(+) as more precise approaches to estimating the long run incremental cost of the defined service.
22. In the submission by Enable, reliance is placed on the CRA paper, and a selective reading of the Plum Consulting paper to conclude that LRIC+ and FDC models are identical. These two papers do not provide sufficient detail on the respective methodologies to make clear the distinction between the two approaches.

23. Analysys Mason supports the Commission's approach to FDC models. They advise that FDC models are not in general suitable for use in the IPP process. It is possible that an FDC model using an appropriate top down analysis which includes suitable current cost accounting, deals correctly with a forward looking depreciation scheme, and which carries out an appropriate efficiency adjustment could be sufficiently forward looking for use as a benchmark for the IPP (as top down LRIC and LRIC+ models have been in the past.) However, the Commission should only accept data from an FDC model after applying stringent tests to ensure that they do indeed meet the underlying requirements of forward looking cost-based models.
24. Analysys Mason has considered the benchmark FDC countries proposed by Enable and recommend that none are suitable the purposes of the IPP:
 - a. The FDC model used in France is based on cost accounting for only the non-competitive areas and not directly comparable to the national price for UBA in New Zealand.
 - b. The Spanish prices are based on a combination of bottom up and top down costing sources. These sources relate to a service with limited geographic coverage or rely on inputs sourced from benchmark countries which are, themselves, not consistent with the New Zealand IPP. Accordingly, the prices are not suitable for use as a benchmark.
 - c. The UK model only applies to a rural region representing a subset of the national network and not directly comparable to UBA in New Zealand.
 - d. While the model developed for use in the Kingdom of Bahrain has some of the features consistent with a forward looking cost based model, it does not deal with depreciation in a forward looking manner. In addition, the size and scale of the Kingdom, its population density, and its economic characteristics are so different from New Zealand, that it is not comparable.
25. In summary, none of the FDC models proposed for use by Enable meet the requirements of the IPP and the Commission should ignore them for this purpose.

Chorus' proposed adjustments for economies of scale

26. Chorus has recommended significant changes to the draft benchmarking methodology based on the potential impact of line density. Chorus also argues that differences in line density in exchanges or cabinets and length of transport links from the exchange or cabinet to the first data switch should be taken into account and adjusted for.
27. We agree that there are likely to be differences in costs relating to, for example, the costs of transport links from the local exchange to the first data switch. However, it is less clear how significant those differences are to a national

benchmark or how much reliance can be placed on the proposed adjustments. The proposed adjustments result in a less reliable estimate of cost than the unadjusted data set, and would expose the Commission to the risk of regulatory error.

28. Although there has been no opportunity to scrutinise the detail by which Chorus' proposed adjustments have been calculated, we believe in practice that Chorus overplays its significance for a number of reasons. Chorus has extrapolated the Danish model results to values of "lines per MDF" that are beyond the range of the Danish input data. Based on the limited detail in their submission and attachment, this seems to apply to values of "lines per MDF" which are less dense than the least dense MDFs served in Denmark, and therefore more expensive since the scale economies are smaller. Since there is no Danish data to justify the extrapolation and the Danish relationship between cost and density is unlikely to hold true outside that data, it would be unsafe to rely on this adjustment. As Analysys Mason point out, even if this approach were to be used, it would be best practice to use only results from within the current range of results of the adjusted model.
29. Analysys Mason also advises that there can be no certainty that the population density metrics used by CEG in its appendix to the Chorus submission correctly reflect the scale economies which may be available. In fact, the last New Zealand census is the most recent dependable sub-national population density data source. While the CEG submission does not indicate the age of the data it used, if 2006 census population mesh block data has been used to estimate line density combined with recent Chorus data, we believe the result is even more questionable. As Analysys Mason suggest, the mapping of mesh block population density in New Zealand to telecommunications network nodes in New Zealand, the assumptions of UBA take up at each node, and the translation to the relevant assumptions in the Danish model seems problematic. In the intervening years New Zealand's net population growth and more rapid net urban population growth suggest that since the last census average line density at network nodes would have increased in New Zealand's most urbanised areas and economies of scale improved. It would be unsafe to rely on this material without closer scrutiny and validation.
30. In short, we believe that the significance of these adjustments is unlikely to be as material as Chorus suggests. The complexity and costs to all parties of reviewing, validating and ensuring the robustness of any actual adjustments which might be made approaches the complexity of an FPP model without the additional certainty of using a model optimised for the New Zealand situation.

[It is unsafe to make isolated adjustments to benchmark cost models](#)

31. As Analysys Mason note, the practice of making such complex adjustments to the parameters of cost models optimised for other countries magnifies the risk of error. Where the adjustments affect the model output significantly (as Chorus'

proposed adjustments do), there needs to be careful scrutiny and validation of results before they can be regarded as safe for adoption.

32. This is because a forward looking cost model requires decisions on a large number of related design and parameter choices. A best practice TSLRIC model would involve a process more or less as follows:
 - a. define the network elements required to deliver the UBA service using the best current technology in widespread use, within an optimal network layout and architecture, and provisioned appropriately in accordance with a capacity/demand balance, costed in accordance with reference to the mix of local and non-local inputs (labour, civil engineering costs, equipment and material costs etc);
 - b. cost those network elements with reference to the direct and indirect costs, allocations of joint and common costs, appropriate judgments as to the degree of network optimisation and dynamic efficiency considerations, appropriate cost of capital and other matters, and validate with reference to the actual network; and
 - c. determine an appropriate regulated price based on the modelled costs.
33. Adjusting the Danish or Swedish models would introduce enormous risk for error since the cost models have a number of inter-related parameters. Chorus and its advisors effectively propose the Commission adjust for only a few parameters, leaving all other inter-related parameters unchanged. For example, Chorus recommend adjusting for demand at the node (increasing costs) without any consideration of efficient equipment choices or network design (reducing cost).
34. Even if adjustments were made to the large number of interrelated parameters, there is potential for significant error in adjusting a cost model as a result. In short, as indicated above, you can't resolve this through the IPP methodology. Analysys Mason notes that the cost model built as part of the process of an FPP determination would deal comprehensively with the kind of issues which Chorus raise.
35. Overall, the proposed adjustment is unreliable and, in the absence of a full cost modelling exercise undertaken in the context of an FPP, we cannot know whether the adjusted price is a better estimate of cost than that provided by the unadjusted data set. Further, the Commission should be very cautious making proposed adjustments that result in costs that fall well outside the benchmark range and are inconsistent with what we know about actual costs in New Zealand.
36. The Chorus proposed adjustment is not one supported by the IPP benchmarking methodology and no adjustment should be made by the Commission. In order

to make a reliable adjustment, the Commission would be required to undertake much of the work required for an FPP cost model in the IPP process. This takes the current process far beyond the purpose and requirements of the IPP benchmarking exercise.

Adjustments based on statistical data is problematic

37. Further, Analysys Mason note that in their experience, mapping geo-demographic data compiled for statistical or other purposes on to an efficient forward looking network configuration is a highly detailed and difficult exercise. Amongst other things, telecommunications engineering practice involves the siting of telecommunications equipment (such as cables, exchanges, active or passive cabinets etc) according to established network design criteria. These will not necessarily correspond to the basis on which geo-demographic data is gathered. In addition actual network architecture and particularly the placement of exchanges will have evolved over time and according to changing demand and demographics. This will not necessarily reflect an efficient forward looking network architecture.
38. Accordingly, it's unlikely that the CEG population density metrics reflect the scale economies which are discussed by Analysys Mason. Further, even if the information did relate to those economies of scale, we note that it is not good econometric practice to extrapolate adjusted model results beyond the range of the original input data. There can be no guarantee that the relationships modelled in the original model hold true outside that range.
39. Chorus also propose a "ratiometric" adjustment on the theory that the price of naked DSL and UCLL have some necessary relationship which means that a ratio between the two can be computed and applied to the New Zealand UCLL price. Analysys Mason conclude that there's no reason for this to be true in general. There are significant differences in the underlying cost drivers that the "ratiometric" approach does not provide sufficient accuracy and precision to be used in setting the UBA price.

Economic depreciation of copper assets in the context of UFB

40. Chorus argues that the substitutability of copper and fibre, changes in demand, and the superior performance of fibre, mean that the Commission should carefully consider the future trajectory of copper prices in New Zealand and the implications for the forward looking depreciation of copper related assets on the costs attributed to them.
41. Chorus propose that adjustments should be made to the IPP benchmark cost estimate to adjust for the differences in depreciation methods due to the impact of fibre on the expected economic life of copper related assets in New Zealand. Analysys Mason broadly support the principle but note that the impact on UBA

pricing is unlikely to be material for the reasons set out in their appended report.

42. Chorus suggest that there will be implications for the depreciation method applied to UBA copper-related assets given the scope and nature of the UFB build programme in New Zealand.
43. Analysys Mason have considered this issue carefully and have commented more fully in their attached report. In short, in their view, the shorter lifetimes of UBA-specific assets, when considered against the planned build programme duration, and the likely rate of adoption of fibre technologies affecting demand for UBA, mean that the impact of the so-called "fibre-cap" is likely to have a significantly less material impact on the UBA price than on the UCLL price.

Section 18 considerations

44. Chorus and local fibre companies effectively reiterate s18 arguments made in the context of the UCLL review, asking the Commission to go beyond what it is empowered to do when implementing the IPP. The Commission has limited discretion within the application of the IPP and cannot set a price that is above the benchmark assessment of a forward looking cost. Alternatively, submitters ask the Commission to read in to s18 a reference to a specific technology or commercial activity. However, s18 is a broad consideration across all technologies, competitors and activities, and the task of assessing where the promotion of competition is in the long term interests of end users has been given to the Commission as a specialist body.
45. In any case, the Government has announced a wide review of the telecommunications regulator framework and this is likely to be where these wider issues are considered. It is appropriate that consideration of these wider issues is left to policy makers with the broader toolset available to them. For example, they would need to consider Flip's arguments that low broadband prices have given many consumers the opportunity to take up broadband for the first time. And setting a high UBA price would likely result in a transfer between consumers (from price sensitive new consumers to fibre) and assessment of where relative economic benefits lie (wider broadband uptake relative to higher speed).

Enable s18 argument

46. Enable claims that the Commission has failed to give proper consideration to the long term benefit of end-users with respect to their transition to and use of fibre. We disagree. The Act is phrased in broad, technologically neutral language and it is clearly the intent to leave the broad assessment, of where the promotion of competition is in the long term interest of consumers, to the Commission. The Commission has previously recognised that fibre exists within a range of access technologies. A plain reading of the Act says nothing about a

preference for fibre. And while fibre, copper and mobile will be essential components of the long term future of New Zealand telecommunications markets, there is no objective reason why the Commission should consider section 18 in itself mandates greater weight for any one of those access technologies when determining the UBA price under the IPP.

47. We also disagree with Enable's view that section 18(2A) relates to investment in fibre only and not to UCLL or any other type of infrastructure investment. We recognise that section 18(2A) was inserted to ensure an appropriate risk premium was recognised if the Commission were to in future regulate fibre pricing. However, the recognition of investment risks and incentives is one matter the Commission must consider more broadly when identifying competition, efficiency, and long term benefits to end users. As the operator of a significant mobile network, we expect section 18(2A) to be applicable to investments made in that network in exactly the same way as it is applicable to investments made by LFCs and Chorus in fibre networks.
48. Section 18(2A) simply does not permit the Commission to formulate the copper to fibre transition through regulated pricing of copper inputs relative to contractually agreed fibre price caps.

Chorus effectively reiterates arguments made in the context of UCLL

49. Chorus make a number of arguments, that
 - a. section 18(2A) provides clarity on the Commission's task, instructing it to focus on dynamic efficiency in the UFB environment;¹
 - b. section 18(2A) requires the Commission to prioritise the successful migration to the UFB network;²
 - c. the Commission is required to set a UBA price that is higher than the entry-level fibre bitstream fibre price cap and that section 18(2A) instructs the Commission to create the copper to fibre transition plan accordingly (as part of this UBA price review process); and³
 - d. section 18(2A) emphasises the central importance of incentives to make infrastructure investments in promoting competition.⁴

¹ Paragraph 156 of the Chorus submission

² Paragraph 158 of the Chorus submission

³ See further paragraph 160 of the Chorus submission which states that "...there is no other migration plan... the tool for incentivising migration to fibre is relativity between copper and fibre prices."

⁴ Paragraph 155 and more broadly Appendix E of the Chorus submission.

50. We disagree. Section 18 requires a broad consideration of competition and competitive outcomes which regulation should seek to achieve. Section 18(2A) only makes it clear that investment incentives and incentives to innovate must be considered within that dynamic. The considerations are not limited to infrastructure, but to the broader set of telecommunications services. What this means within the limited discretion of the IPP and with regard to fibre considerations (when determining the UBA price), is left to the Commission.
51. Section 18(2A) cannot be read as an instruction to the Commission to formulate a copper-fibre migration plan. To do so would be to stretch the interpretation of the statute beyond any reasonable literal or purposive approach. Further, at the time the Government amended the Act with a number of specific provisions to facilitate UFB, it had every opportunity to implement other fibre considerations such as a migration plan. It did not. It set the Commission a task to set a cost-based UBA price to apply after a 3-year transition period.⁵ Accordingly, the Commission was left with a specific task (set a cost based UBA price) using the IPP informed by broad section 18 considerations. In doing this, Parliament did not mandate a particular preference (within consideration of the promotion of competition), leaving this to the consideration of the Commission.
52. In any case, there is little to suggest that the UBA price will impact on the incentives to innovate, and risks faced by, investors in fibre based services. Chorus and LFCs intuitively suggest that consumers accessing cheaper broadband services will have a material impact on the uptake of fibre based broadband services. However, the evidence does not necessarily support that view.
53. Early consumer research indicates that UFB uptake will come from early adopters - those that typically place high value on new technology and are less price sensitive. Over time, fibre uptake will be supported by consumers who value that additional capabilities and speeds fibre services provide. Conversely, a high UBA price would divert retailer efforts away from developing new fibre based services.
54. Ultimately, the UFB roll out is at an early stage and it will be a number of years before we know whether (and how) the UBA price may impact fibre take up. The Commission would simply be taking a punt to base decisions on what we know about demand today.

⁵ Section 77(1)(a) of the Amendment Act makes it clear that the Commission's task in this case is only to review the UBA STD for the purpose of making changes that may be necessary to implement the IPP and FPP after 3 years from separation day.

Connection charges

55. Chorus proposes that connection and transfer charges are predominantly third party costs and can be set by reference to actual costs. Further, Chorus proposes that the Commission should adopt a set of standardised definitions that apply across regulated services.

Applying the benchmark methodology to connection charges

56. As set out in our response to the 2012 UBA discussion paper, we are open to reviewing the structure of the charges and activities associated with connection and transfer charges. However, we are also conscious that benchmarking remains an important check to ensure there is no double recovery of costs and Chorus retains an incentive to negotiate efficient service company prices.
57. The Commission must apply a benchmarking methodology to core elements of the UBA service and this includes connection to the network. However, we accept that some customer premises related activities such as home wiring are unlikely, of themselves, to be core the UBA service and could be considered a sundry or ancillary activity.
58. In terms of core connection activity, it's unclear whether a benchmark or cost based approach will deliver efficient connection charges. On the face of it, it's not clear which costs properly relate to connection charges (as opposed to being implicit to benchmarked monthly rental charges) and where they should be recovered. For example, Chorus' proposed definitions in appendix J include activity related to constructing a circuit to premises that have previously been connected to the network. However, this activity relates to the management of access network capacity and the costs should be born by the access provider.
59. This is because the access provider is best placed to manage the trade off between pro-actively maintaining - or adding - capacity to the access network and reactive connection work in the network. For example, Chorus would be incented, if these costs were to be recovered through connection charges, to break down intact lines rather than fix faulty pairs or add capacity to a serving area (as the higher costs of constant network re-arrangements are recovered from RSPs).
60. In any case, as set out in our submission, the initial connection to the network could apply to any number of services, including UCLL, UBA or UCLFS (Baseband). Accordingly, the Commission will likely need to consider related costs and appropriate allocation to the parties of those costs in the UCLL final pricing review.

Chorus proposed definitions

61. Finally, Chorus propose the Commission adopt definitions set out in Appendix J and that these be applied consistently to all regulated services. While we

support a consistent understanding of related connection services across regulated services, we have reservations over the definitions proposed by Chorus. For example, they include activities and costs that should properly be born by Chorus. We believe it is sufficient for the Commission's current UBA pricing review to simply amend the current descriptions in the pricing schedule as proposed in our earlier submission.

End

Attachment 1: Analysys Mason report