



Report on the Commerce Commission's Emerging Views on Fibre Regulation

Prepared for Trustpower Limited

By:

Emma Ihaia and Alexis Hardin

15th July 2019

Link Economics Limited
Nelson, PO Box 158, Nelson 7040, New Zealand
Canberra, PO Box 4031, Hawker ACT 2614, Australia
www.linkeconomics.com
info@linkeconomics.com

Contents

1	Introduction and summary.....	2
2	Principles	4
2.1	Pricing principles and application to LFCs	4
2.2	Economic principles to guide the design of the regulatory regime	5
3	Cost allocation	6
4	Treatment of initial losses and Crown financing arrangement	7
5	Capex, under-investment risk and implications for WACC uplift	9
6	Other issues	10
6.1	Application of IMs to LFC.....	10

1 Introduction and summary

We have been asked by Trustpower Limited to provide comment on a number of key issues raised in the Commerce Commission’s consultation paper “Fibre regulation emerging views: Technical Paper” (**Emerging Views Paper**). Our report has a particular focus on the way in which decisions on the Fibre Input Methodologies (**Fibre IMs**) that apply under Part 6 of the Telecommunications Act will impact on consumer outcomes and competition, taking into account differences between telecommunications markets and sectors such as electricity networks that are regulated under Part 4 of the Commerce Act.

There is a significant level of complexity with regard to the way in which competition may be affected by Fibre IM decisions, and likely substantially more so than for IMs decisions relating to other sectors regulated under Part 4. Specific examples of the complexities associated with how decisions on the Fibre IMs will impact competition and consumer outcomes include:

- The relative pricing between fibre and copper pricing over time and implications for the speed of transition from copper to fibre services. Unlike electricity connections, which are at a mature level of uptake, fibre uptake is still growing as migration occurs from copper networks. A number of IM decisions, including those relating to cost allocation, cost recovery profiles over time (for example, depreciation profiles, and the calculation and recovery of initial losses) will affect the price of fibre relative to copper, which in turn will impact on RSPs’ incentives for promotion and use of fibre relative to copper services.
- The evolution over time of the competitive pressure that copper networks place on fibre networks. The competitive constraint that copper networks exert on fibre networks is likely to reduce over time as the demand for bandwidth increases, which will have implications for the regulatory treatment of the LFC networks, including the appropriate level of regulatory oversight and monitoring where those networks are not subject to price-quality regulation.
- The pricing of Fibre Fixed Line Access Services (**FFLAS**) at different levels of the vertical supply chain, such as unbundled services, Direct Fibre Access Services (**DFAS**) and layer 2 services. The resulting relativity in prices of vertical services, which will be affected by IM decisions such as those relating to cost allocation, will affect the choice of inputs used by RSPs, which in turn will impact competition at the retail level.
- The pricing of inputs used to supply telecommunications services via other networks such fixed wireless and mobile networks. Some of these services will be complementary services to retail fibre services and some will be substitutes. A range of factors that affect the maximum allowable revenue, such as the WACC parameters, WACC uplift and cost allocation will influence outcomes, including incentives of RSPs to invest in competing or complementary services. For example, fibre over-investment incentives created by WACC uplifts may distort the ability for fixed wireless to provide an attractive substitute to fibre services. In addition, IM decisions (and price-quality decisions) on inter-temporal adjustments, such as wash-ups and incentives, have the potential to alter the incentives to invest in alternatives such as fixed wireless, either through creating an over- or under-incentive to invest at particular points in time, or as a deterrent simply through the uncertainty that the presence of inter-temporal adjustments may cause for fibre access prices.

- Implications for competing fibre (and HFC) networks, with similar considerations to those highlighted above for fixed wireless competition.

The application of building block model regulation clearly has the potential to affect allocative and productivity efficiency, but in respect of telecommunications sector there is also a heightened impact on dynamic efficiency as a result of potential impacts on incentives for investment in alternative networks as well as for downstream competition. While the Commission is clearly aware of the complexities associated with application of IMs to fibre services, it seems crucial that these are kept front of mind in making Fibre IMs decisions. These complexities, uncertainties and evolving nature of the telecommunications sector also mean that it is important to incorporate flexibility in the regulatory process without trading off rigour and robustness in determining methodologies.

With the above concerns regarding the importance of considering competition and consumer impacts of decisions on Fibre IMs in mind, key findings and recommendations of our report are that:

- The Commission should consider applying pricing principles to the LFCs as a means for implementing a light-handed oversight regime. Disclosures that require assessing pricing methodologies against pricing principles in electricity distribution, including for companies that are not subject to price-quality regime, provide an example of how this can work.
- The addition of a principle relating to competition would crystallise the Commission's interpretation of s166(2) and better recognise the importance of having regard to the impact of IM decisions on competition and consumer outcomes (as discussed above).
- Cost allocation decisions will potentially have a very significant impact on outcomes and require a rigorous and transparent process. While there may be difficulties in determining upfront rules in the IMs with a high degree of specificity, as an alternative Chorus could be required to engage in a consultative process when determining cost allocation rules, with its resulting rules subject to independent verification and approval by the Commission.
- Using the WACC to carry forward initial losses is likely to overcompensate Chorus for the costs it incurs and artificially inflate consumer prices. It would be helpful for the Commission to extend its worked example of initial losses to demonstrate that the revenue stream received by Chorus only compensates for the costs it incurs, consistent with the FCM principle.
- Calculation of regulatory tax should take into account lower tax losses in future as a result of Chorus' treatment of Crown financing in its annual accounts.
- A comparison of investment incentives between electricity distribution and telecommunications indicate that there are a number of reasons why underinvestment is less likely to occur for fibre networks. This finding does not support a WACC uplift for fibre services. To the extent that there are underinvestment concerns, these are better addressed through quality measures than through a WACC uplift, especially in light of the investment distortions that could result from the application of a WACC uplift.
- Crown financing is a mitigating factor with regard to concerns around under-recovery of fibre capital costs in the event that competition from other networks strengthens in future.

2 Principles

2.1 Pricing principles and application to LFCs

The report on pricing prepared by the Commission's experts, Ingo Vogelsang and Martin Cave ("Pricing under the new regulatory framework provided by Part 6 of the Telecommunications Act") states that the Commission asked the experts to examine Chorus' pricing. The expert report on pricing investigates whether additional pricing principles should be applied to Chorus beyond the pricing constraints that it will already face as a result of legislative or regulatory requirements.

A further relevant question that does not appear to have been posed to Vogelsang and Cave is whether pricing principles should be applied to the LFCs. While the LFCs are not subject to price-quality regulation, at least at the outset of the regime, in the interests of transparency and regulatory oversight/monitoring it may be appropriate to have applicable pricing principles with disclosure requirements for LFCs to assess how their pricing compares with those principles.

While broadband services supplied over copper networks place at least some competitive constraint on fibre pricing at the outset of the regime, it is unlikely that this competitive constraint will be sustained over the medium to long-term as bandwidth requirements extend beyond the limitations of the copper network. Application of pricing principles to the LFCs will help ensure the interests of consumers are protected.

The notion of applying pricing principles could be similar to the electricity distribution context in which all lines companies (whether or not they are subject to price-quality regulation) are required under the Electricity Distribution Information Disclosure Determination to produce a pricing methodology disclosure which includes, among other things:

- how the company calculates its revenue requirement;
- how that revenue requirement is allocated across load groups/consumer types;
- how the revenue requirement is converted into prices; and
- whether those prices are consistent with a set of pricing principles.

In the electricity distribution context, the pricing principles are defined by the Electricity Authority and while the principles are voluntary the assessment and disclosure of how pricing compares with those principles is mandatory. In the context of fibre, pricing principles could either be set out in the Fibre IMs or in a separate document. While relevant disclosure requirements may need to be different for fibre access providers than for electricity distribution networks (for example, public disclosure of future pricing strategy may not be appropriate where LFCs face at least some competition from other networks), the electricity distribution pricing disclosure requirements provide a reference point and an example of how a light-handed oversight regime can be implemented.

A pricing methodology disclosure could also address in the future the relativity between the pricing of unbundled products, dark fibre, and Layer 2 services. This may aid in ensuring against foreclosure of competition for layer 2 products using unbundled services.

2.2 Economic principles to guide the design of the regulatory regime

The Commission's Emerging Views Paper identifies the three economic principles that are utilised in Part 4 IM application as also being appropriate to guide its decisions on Fibre IMs. These are: (1) real financial capital maintenance (FCM); (2) allocation of risk; and (3) asymmetric consequences of over and under-investment. The Commission asks whether there is an economic principle related to competition that would increase regulatory certainty and would inform its decision-making process over and above the purposes described in s 166(2).

As recognised by the Commission there are significant differences between telecommunications markets and those regulated under Part 4. These include a degree of existing or potential network competition at least in some areas. In addition, there is varied retail competition, including significant differences in retail market structure. For example, market concentration is much higher in broadband than electricity, with the three firm concentration ratio for retail broadband being 82% as compared with 60% for retail electricity services. IM decisions have the potential not only to impact on incentives for infrastructure-based competition but also on the dynamics of retail competition, for example, by influencing the relative price of alternative FFLAS products that may be used by different RSPs.

As was highlighted in section 1, it is crucial that decisions on the Fibre IMs require specific consideration of competition impacts. These considerations will differ from Part 4 and are not necessarily captured by the three economic principles identified by the Commission. A specific example of how a principle that relates to competition impacts would be important for application to Fibre IMs is the use of inter-temporal adjustments – that is, where an adjustment relating to activity in one regulatory period occurs in a separate regulatory period. Inter-temporal adjustments, such as such as capex wash-ups, clawbacks, and incentive schemes are common in the application of Part 4 to electricity networks, with significant impacts on network prices. While these may not be ideal even in an electricity sector context, these types of adjustments could have large impacts on competition in the telecommunications sector. A further inter-temporal adjustment in the Fibre IMs is the recovery of initial losses, the treatment of which has the potential to have a significant impact on the path of prices over time and the development of both network and retail competition. The level of FFLAS prices and their path over time will impact on incentives to make investments either in alternative networks, or in infrastructure required to utilise FFLAS products in order to provide downstream products, as well as affecting migration from copper to fibre. Unexpected upwards or downwards adjustments in FFLAS prices resulting from these inter-temporal adjustments may significantly impact on the business case for investments by telecommunications networks and RSPs, as would the uncertainty associated with the potential for these inter-temporal adjustments to occur.

Cost allocation, to be discussed in more detail below, is another clear example of where there is significant potential for competition to be affected by methodological choices, even when a range of options are consistent

with the three economic principles identified by the Commission. While we understand that the Commission would intend to have regard to s166(2), following the consultation that the Commission has conducted on the interpretation of s166(2), a competition principle would help crystallise how this interpretation will be applied in making IM decisions, to ensure clarity and to elevate the prominence of competition considerations. We also note that in the context of electricity, the Electricity Pricing Review has highlighted a need for further consideration of consumer impacts of regulatory decisions.

3 Cost allocation

Cost allocation has the potential to be much more significant in influencing competitive outcomes in telecommunications markets than in downstream markets relating to access services regulated under Part 4, both due to: (1) the size of Chorus' common operating and capital costs; and (2) the implications for competition.

There are potentially very significant shared costs, both in terms of operating expenditure and assets in the telecommunications context. By way of example, at the time it was established (December 2011) Chorus's annual reports record around \$2.4 billion of assets, prior to commencing its UFB deployment.¹ While it is unclear what proportion of that amount relates to assets that may be utilised by the fibre network (such as ducts, poles and fibre backhaul), the total pool from which to allocate is clearly very large.

With regards to competition implications, in the electricity sector all retailers pay the same price and use the same access product. In contrast, for telecommunications supply there may be options to invest in an alternative network, whether fixed (such as fibre), fixed wireless or mobile, as well as choices between FFLAS services. The way in which costs are allocated between services could distort incentives for investment in other networks and selection by RSPs of FFLAS services.

Given that cost allocation decisions have the potential to have a significant impact on consumer outcomes, including through impacts on competition as well as directly through the level of the access price, it is important that these decisions are made in a robust and transparent manner.

The Commission's emerging view on cost allocation is generally not to take a prescriptive approach, for a number of reasons including uncertainty in relation to technology changes, difficulties in ensuring that rules are robust to future events and do not have unintended consequences, as well as being time consuming to prepare in a manner that addresses numerous contexts. However, the Commission recognises that "a less prescriptive approach may present some challenges to compliance, enforcement and in some situations uncertainty in ensuring the intended outcomes are achieved."

¹ Chorus 2012 Annual Report shows its non-current assets as at 1 December 2011 to be \$2.436 billion.

If the Commission continues to be of the view that a prescriptive approach to cost allocation is not appropriate it should consider alternatives that provide a robust process for determining allocation rules. For example, one option would be to require Chorus to prepare and consult on a cost allocation methodology. The resulting set of cost allocations could then be subject to independent verification and approval by the Commission. This would enable scrutiny and input from RSPs and other stakeholders, providing a more rigorous process and greater degree of confidence in resulting allocators that promote the interests of end users, than a framework in which the regulated supplier has discretion to implement cost allocation itself subject only to guiding principles.

We agree with the Commission's view that Chorus and LFCs must adopt the same approach that is proposed to allocate costs between regulated FFLAS and other services post-implementation date when determining the valuation of the initial RAB. A requirement to ensure consistency in selection of allocators over time, products, and geography would aid in avoiding over-recovery, regulatory gaming or the use of market power to harm competition.

4 Treatment of initial losses and Crown financing arrangement

The calculation and treatment of initial losses is complex and will potentially have a significant impact on consumer outcomes. We do not purport to provide a complete view on the appropriate methodology, but instead provide some observations and highlight some relevant issues for the Commission to consider.

As a general matter, it is important to ensure that the revenue Chorus receives is no more than the costs it incurs. In assessing whether this holds, the Commission could extend its worked example to demonstrate that costs equal revenues (including from initial losses) in NPV terms.

We have the following specific comments on the treatment of initial losses:

- **Depreciation:** The Commission has identified an additional question for consultation on whether depreciation should be permitted as a building block component during the loss period with respect to the value of assets which are funded by Crown financing. It also asked whether depreciation should be permitted in respect of the value of assets which are funded by Crown financing, for the period after implementation date.
In our view, the issue that is created is the way in which unrecovered depreciation expenses are effectively carried forward in the calculation of initial losses. Because the Crown financing provides an interest-free loan, a carry forward of unrecovered depreciation at a discount rate that exceeds 0% will breach the FCM principle. It would be helpful for the Commission to extend its worked example of initial losses to demonstrate that the revenue stream received by Chorus in PV terms does not exceed the costs it incurs.
- **WACC used to calculate the present value of losses:** Even setting aside the issue of depreciation in the initial loss calculation, there is a question of the appropriate discount factor to use in carrying forward losses. It is important that the manner in which losses are carried forward does not over-compensate Chorus and artificially inflate prices for consumers.

- **Recovery profile and effect on competition:** Regardless of the methodology that the Commission selects to calculate the initial losses, it is important that the recovery profile doesn't distort competition and consumer outcomes. For example, a large step-up in prices following the implementation date may alter consumer incentives to utilise fibre vs other networks.
- **Regulatory tax:** We note that according to Chorus' annual reports, Chorus has not made a loss in any year since its establishment (see Table 1). Given this, we agree with the Commission's proposal to assume that losses from fibre deployment are set against the remainder of Chorus' business. We have not examined this issue in respect of the LFCs.

Table 1: Chorus' net earnings (after income tax expense)

\$m	2012	2013	2014	2015	2016	2017	2018
Net earnings (after tax)	102	171	148	91	91	113	85

Source: Chorus Annual Reports 2012-2018

Chorus' positive net earnings appear to be primarily due to the margins earned on other non-UFB aspects of Chorus' business. However, another contributing factor is its treatment of Crown funding. Chorus' annual reports record Crown funding as an offset against depreciation (see the table below which is an extract from Chorus' 2018 Annual Report).

Table 2: Depreciation and amortisation as recorded in Chorus 2018 Annual Report

Depreciation and amortisation

	2018 \$M	2017 \$M	Estimated useful life (years)	Weighted average useful life (years)
Depreciation				
Fibre cables	78	72	20	20
Ducts and manholes	42	39	20–50	49
Copper cables	51	53	10–30	22
Cabinets	41	45	5–20	14
Property	15	19	5–50	25
Network electronics	65	67	2–25	9
Right of use assets	13	–	10–50	28
Other	–	–	2–10	6
Less: Crown funding	(22)	(21)		
Total depreciation	283	274		
Amortisation				
Software	61	65	2–8	4
Customer retention	43	–	0–3	2
Other intangibles	–	–	6–21	21
Total amortisation	104	65		

Source: Chorus 2018 Annual Report, p. 22.

Presumably the repayment of Crown funding will reduce Chorus' future tax obligations. It is important that the Commission ensures that the methodology used for calculating regulatory tax does not overstate the tax allowance required in future periods.

- **Changes to Crown financing arrangements:** We note that an issue for the Commission to consider is where access to Crown financing is terminated early through a commercial decision of a UFB network owner. For example, as was the case for UltraFast Fibre. In such a situation there may be a question of whether a full commercial WACC is appropriate if the UFB network owner chooses to opt out of a 0% financing rate. In particular, whether it is appropriate that consumers pay higher prices as a result.

5 Capex, under-investment risk and implications for WACC uplift

With regard to whether the risks of underinvestment imply the need for an uplift and how this compares with the electricity context, we make the following observations:

- The consequences of underinvestment are likely a lot greater for users of electricity networks because when network capacity is exceeded there would be blackouts/load-shedding. Electrical connections are typically either on or off, whereas broadband access generally remains on but slows if capacity demand exceeds provisioned network capacity. Moreover, mobile broadband, which has widespread uptake, at least provides some back-up alternative to fibre broadband. There are not widespread backup options for electricity (eg, solar is commonly grid-tied, and only a small proportion of connections have their own generators).
- Fibre network upgrades would typically be a lot less costly than electrical network upgrades – eg, fibre network service upgrades will often primarily require upgraded layer 2 equipment, rather than layer 1.
- UFB networks are new with a significant proportion of the cost being associated with long-lived assets. After the initial fibre deployment, Chorus' capex requirements may well be fairly limited for a significant period of time. In contrast, electricity networks are at a stage in their lifecycle where there is a significant amount of infrastructure that needs to be replaced as assets reaching the end of their useful lives.
- There is a greater ability in fibre networks to prioritise particular types of traffic, whereas for electricity network, ability to prioritise different types of electrical consumption is typically limited to where a consumer has opted in to load control of some of its load (eg, hot water).

In sum, underinvestment risks and implications are likely to be much less significant in fibre than electricity. To the extent that there are underinvestment concerns, these are better dealt with via quality measures, particularly given the Commission's view that underinvestment is likely to be more observable for fibre networks than electricity. In addition, WACC uplifts in the fibre context may lead to an over-investment in fibre, thereby distorting the potential for competition from other networks.

With regard to the risk of competitive entry/expansion (eg, asset stranding through technological innovation, other competitive effects), the Commission identifies the following possible measures: the ability to shorten asset lives and bring forward compensation; retention of assets in the RAB after stranding; ex-ante compensation

allowance such as an ex-ante cashflow allowance or an increment to the WACC; ring-fenced ex-ante compensation allowance. We note a mitigating factor in terms of the risk of under-recovery in the event of competitive entry and/or expansion is that Crown financing has effectively subsidised UFB deployment, as compared with non-UFB competitive networks, so even if an alternative network is at least as efficient as Chorus in terms of its operational expenditure and capital expenditure, it will effectively have higher costs than Chorus, allowing Chorus to earn above-normal profits in the event that it is no longer subject to Part 6 regulation when competitive entry occurs.

6 Other issues

6.1 Application of IMs to LFC

The Commission considers the issue of whether the IMs should apply to all entities (ie, the LFCs as well as Chorus), in light of the smaller size of the LFCs relative to Chorus. The Commission concludes that the balance of the benefits of having a standard IM covering all entities outweighs the potential burden faced by these LFCs. It notes that under Part 4, entities of differing sizes within the same regulated sector are subject to the same set of IMs. We agree and note that even the smallest LFC (Northpower Fibre Limited) is significantly larger than a number of electricity distribution business that are subject to the Electricity Distribution IMs. According to its 2019 annual report, Northpower Fibre had 14,606 connections, which means that its fibre business as measured by connections is already larger than 6 electricity distributors, 2 of which are subject to price-quality regulation, with all 6 being subject to information disclosure requirements and the corresponding IMs. It is also noted that Northpower Fibre’s parent company is already required to comply with electricity distribution IMs and disclosure requirements (including the pricing methodology disclosures discussed above). The sizes of the other LFCs, as measured by the number of connections, are already in the highest quartile of electricity distributors.

Figure 1: Average number of ICPs by electricity distributor

	Electricity distributor	Average number of ICPs		Electricity distributor	Average number of ICPs
1	Buller Electricity	4624	16	Alpine Energy	32975
2	Scanpower	6665	17	The Power Company	35698
3	Centralines	8561	18	MainPower NZ	38232
4	Nelson Electricity	9210	19	Network Tasman	39578
5	Network Waitaki	12814	20	Counties Power	41704
6	Westpower	13526	21	Electra	44396
7	OtagoNet	16000	22	Northpower	58430
8	Electricity Invercargill	17404	23	Aurora Energy	88588
9	EA Networks	19217	24	WEL Networks	90601
10	The Lines Company	23768	25	Unison Networks	112781
11	Horizon Energy	25000	26	Wellington Electricity	166910
12	Marlborough Lines	25374	27	Orion NZ	199838

13	Eastland Network	25512	28	Powerco	337135
14	Waipa Networks	26077	29	Vector Lines	557490
15	Top Energy	31641			

Source: Electricity Distribution 2018 Information Disclosures

Note: Electricity Distributors highlighted in orange are subject to price-quality regulation.

About Link Economics

Link Economics is the consultancy of economists Emma Ihaia (Lanigan) and Alexis Hardin. Link Economics has a strong focus on quantitative economics that can be applied in practical commercial contexts. We have been heavily involved in numerous access pricing projects for market participants, regulators and government bodies. Telecommunications is a key sector of expertise, and our consultants have worked with telecommunications firms or regulators in New Zealand, Australia, Europe, Asia, Africa, the Americas, and the Pacific Islands.

Emma Ihaia specialises in competition analysis and regulatory economics, with more than 20 years of experience in this field, primarily in the telecommunications and electricity sectors. As a Principal Economist for Link Economics, Emma has been retained as an expert in the context of regulatory investigations and consultations, competition assessments, legal proceedings and government reviews. Matters have included market definition and market power analysis, anti-competitive conduct, mergers, access pricing, infrastructure deployment strategy and the implementation of regulatory regimes, with a special focus on the telecommunications sector. Emma recently held a senior management position at an electricity distributor where her responsibilities included regulatory compliance, network pricing strategy, commercial business case analysis, managing relationships with retailers, and communications. She has also led the Electricity Networks Association's working group initiatives on pricing reform in New Zealand for the past three years. While telecommunications and electricity networks have been areas of special focus, she has also worked on projects relating to airlines, postal services, medical supplies, financial services, transport and pay television. Emma holds a Master of the Arts (First Class Honours) in Economics from the University of Auckland for which her thesis examined access pricing arrangements between monopolistic networks.

Alexis Hardin has extensive pricing and regulatory experience in infrastructure sectors. For the past 20 years, the focus of Alexis' professional career has been the application of quantitative economics to network industries including telecommunications, electricity, water, gas and airlines. Over this period, she has worked as a consultant and as an employee of Telstra Australia and ACT electricity distributor ActewAGL, with her experience spanning both the commercial and regulatory aspects of these businesses. Through her consulting experience and her time at Telstra and ActewAGL, Alexis has developed substantial expertise in Building Block Models commonly used for utility regulation. Alexis' role at ActewAGL involved responsibility for the financial modelling that determines pricing for electricity, gas and water services in the ACT. At Telstra, Alexis was the Group Manager of Economic Analysis in Regulatory Affairs, managing the quantitative and economic analyses required to support Telstra's regulatory functions. Alexis then took on the position of Director of Mobile Pricing at Telstra, responsible for the development and implementation of the company's retail mobile pricing strategy. Before joining Telstra, Alexis worked as an economics consultant where she had a special focus on regulatory issues in the telecommunications sector and undertaking numerous assignments for major corporations and government agencies internationally. Alexis studied economics at the Australian National University, majoring in econometrics.

Link Economics Limited

Nelson, PO Box 158, Nelson 7040, New Zealand
Canberra, PO Box 4031, Hawker ACT 2614, Australia
Website: www.linkeconomics.com
email: info@linkeconomics.com