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Draft pricing review determination for Chorus' unbundled copper local loop service

Under section 47 of the Telecommunications Act 2001

Draft determination

Date: 2 December 2014

The Commission: Dr Stephen Gale

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Contents

Glossary

ACCC	Australian Competition and Consumer Commission
Act	Telecommunications Act 2001
ADSL	Asynchronous digital subscriber line
Amendment Act	Telecommunications (TSO, Broadband, and Other Matters) Amendment Act 2011
Common costs	We generally this term to refer to costs not directly attributable to any individual service or sub-group of services; they are attributed to all services See also "shared costs"
CERA	Canterbury Earthquake Recovery Authority
CPI	Consumer price index
CPP	Customised price-quality path
CI	Confidential information
DBA	Danish Business Authority
DSL	Digital subscriber line
DORC	Depreciated optimised replacement cost
DPP	Default price-quality path
DSLAM	Digital subscriber line access multiplexer
EC	European Commission
EDB	Electricity distribution business
EPMU	Equi-proportional mark-up
FPP	Final pricing principle
FTTH	Fibre-to-the-home
FTTN	Fibre-to-the-node
FWA	Fixed wireless access
GPON	Gigabit Passive Optical Network

HFC	Hybrid fibre-coaxial
HSNS	High Speed Network Service
IM	Input methodologies
IP	Internet protocol
IPP	Initial pricing principle
LCI	Labour cost index
LFC	Local fibre company
LTE	Long-term evolution
MDF	Main distribution frame
MEA	Modern equivalent asset
NPV	Net present value
NRA	National Regulatory Authority
ODF	Optical distribution frame
ORC	Optimised replacement cost
P2P	Point-to-point
PPP	Purchasing power parity
PSTN	Public switched telephone network
RAB	Regulatory asset base
RBI	Rural broadband initiative
RFP	Request for proposals
RI	Restricted information
RSP	Retail service provider. We use the term RSP where the Act uses “access seeker”
Shared costs	TERA uses ‘joint costs’. We generally use this term to refer to costs not directly attributable to any individual service, but that can be attributed to a sub-group of services (rather than to all services) See also “common costs”

SLU	Sub-loop UCLL
SLU STD	We use SLU STD to refer to the part of the document that relates to sub-loop UCLL, but not to sub-loop co-location or sub-loop backhaul
STD	Standard terms determination
TSLRIC	Total service long run incremental
TSO	Telecommunications Service Obligations
UBA	Unbundled bitstream access
UBA STD	UBA standard terms determination
UCLF	Unbundled copper low frequency service
UCLL	Unbundled copper local loop.
UCLL STD	UCLL standard terms determination
UFB	Ultra-Fast Broadband
ULL	Unbundled local loop
USO	Universal service obligation
VoIP	Voice over internet protocol
WACC	Weighted average cost of capital

Executive summary

1. This draft determination proposes a maximum monthly price that Chorus can charge for the monthly rental of the unbundled copper local loop (UCLL) service. This price has been developed following applications from Chorus and access seekers, and has involved the development of a full total service long run incremental cost (TSLRIC) model.

2. The draft monthly rental prices for the UCLL and sub-loop unbundled copper local loop (SLU) services are $28.22 and $14.45, respectively. This is an increase of $4.70 and $0.24 per month for the UCLL and SLU services, respectively, from the prices set under the UCLL initial pricing principle (IPP) determination in December 2012.

3. We are also completing a final pricing principle (FPP) determination for the unbundled bitstream access (UBA) service. The draft combined monthly price is $38.39. This is a decrease of $6.59 per month from the prices that existed prior to the 2011 amendments to the Telecommunications Act 2001 (Act) feeding through to the price determinations and an increase of $3.95 from the prices set under the UBA IPP determination in November 2013.

4. This is the first time that we have gone through an exercise of this nature and magnitude in full. It has required a significant amount of information from and work by the industry and we are grateful for the constructive way in which parties have contributed.

5. We have employed experienced expert modellers, TERA Consulting (TERA), to construct a full model of the hypothetical efficient operator's costs from bottom-up using detailed topographical data combined with local costing expertise from Beca. We have also sought specialised expert advice on specific topics from Professor Ingo Vogelsang, Dr James Every-Palmer, Dr Martin Lally, and Oxera Consulting (Oxera). The models and their documentation published alongside this draft determination lay out in detail how we have arrived at the draft prices.

6. We have elected to conduct a more streamlined process than advocated for by some parties. Our approach has been driven by the desirability of providing the industry and the market with certainty and stability as soon as practicable.

7. We are now interested in your views on the model that we have built and the reasoning behind our modelling choices. This consultation phase is itself a significant exercise. Certainty for the industry and consumers on the price will not be achieved until we have completed this consultation exercise. These prices are not final. There are a number of matters that we need to work through with industry over the coming months that could still impact on the final prices, including:

    7.1 submissions from the industry on our preliminary decision on the inputs and design of the model;

    7.2 our preliminary decision on non-recurring charges (we will be commencing consultation on this early next year);

    7.3 our preliminary decision on whether or not there should be backdating of prices (we will be commencing consultation on this early next year); and

    7.4 potential errors and corrections to data. Chorus has already notified us that there are a number of corrections it wishes to make to the data that has been provided to us.

8. In the box below we lay out a synopsis of our most important modelling choices and how these combine to form the basis of the model we have published today, to assist with navigating our draft decision.

What we have modelled and why

We have developed a full TSLRIC model of the networks that will deliver UCLL and UBA services. The model is "forward-looking". This means that it is not based on Chorus' existing network and it uses modern equivalent assets (MEAs). The model is therefore a hypothetical efficient network that **replaces** the copper network and the LFC fibre networks currently being rolled out.

There are a large number of decisions that need to be made when developing a model such as this to create a price. Key features of our model include:

- We have tried, where possible, to create a conventional TSLRIC model. This helps promote regulatory predictability. We have, therefore, avoided building in more recent innovations in European policy.
- The hypothetical efficient operator uses fibre to supply the UCLL service. We decided this by modelling both copper and fibre networks and establishing that fibre has the lower lifetime cost.
- The network has been partially optimised (relative to the current copper network). This optimisation reflects the fact that it is intended to be a modern replacement network, so it has been designed as if it was efficient now (rather than reflecting all past legacy decisions).
- The network provides services to all end-users who are currently connected to Chorus' copper network. The model recognises those areas where the network would not be built other than through receipt of additional capital contributions and where a fixed wireless network would provide a more cost-effective solution to serve end-users. We believe this is firmly grounded in the reality of a network roll-out today and reflects actual practice.
- Demand is assumed constant for the services. This is because we are setting a long-term benchmark price for the services being modelled.
- We have allocated costs of the network between regulated and other services using standard cost allocation methods. Where the data was not available to do this we have relied on expert advice from TERA.

Overall this represents the efficient long-term replacement network for supplying New Zealand with telecommunications services for the purposes of TSLRIC modelling.

Introduction and process

Purpose of this document

9. We are in the process of setting prices for the unbundled copper local loop (UCLL) and sub-loop unbundled copper local loop (SLU) services provided by Chorus, using the final pricing principle (FPP) in the Telecommunications Act 2001 (Act). This draft determination sets out, and seeks the views of interested parties on, how we have determined draft TSLRIC prices for the UCLL and SLU services, as well as our reasons for our approach to setting the draft price.

10. We have determined the following draft TSLRIC prices for the UCLL, SLU, and unbundled copper low frequency (UCLF) services:

	National (geographically averaged)	**Urban**	**Non-urban**
UCLL	28.22	20.63	47.73
SLU	14.45	14.45	7.43
UCLF	28.22	-	-

11. This draft determination does not set out:

    11.1 the UCLL non-recurring charges (the service transaction charges and the ancillary services charges); or

    11.2 our approach to backdating.

12. Those matters will be addressed in a supplementary draft determination, as we explain further below from paragraph 40.

Background to our TSLRIC cost modelling of the UCLL service

The UCLL service

13. The UCLL service is a designated access service described in the Act as follows:[1]

Chorus's unbundled copper local loop network

Description of service:	A service (and its associated functions, including the associated functions of operational support systems) that enables access to, and interconnection with, Chorus's copper local loop network (including any relevant line in Chorus's local telephone exchange or distribution cabinet)

[1] Telecommunications Act 2001, Schedule 1, Part 2, Subpart 1.

14. The UCLL service, as described by the Act, includes local loops connecting end-users to local exchanges (non-cabinetised lines) and local loops connecting end-users to distribution cabinets (cabinetised lines). We then divided the UCLL service described in the Act into two separate standard terms determinations (STD): the UCLL STD for non-cabinetised lines and the SLU STD for cabinetised lines.

15. On 7 November 2007, we published a STD for the designated service Telecom's unbundled copper local loop network (the UCLL STD).[2] In the UCLL STD, following consultation with interested parties, we specifically excluded local loops connecting end-users to distribution cabinets.

16. Subsequently, on 18 June 2009, we published a further standard terms determination for the designated access service Telecom's unbundled copper local loop.[3] The SLU STD document includes three services: the sub-loop UCLL service, the SLU co-location service and the SLU backhaul service. In this draft determination we refer to the SLU STD only in relation to the sub-loop UCLL service, which we call SLU. The SLU STD set the SLU service in reference to local loops connecting end-users to distribution cabinets.

17. When we refer to UCLL or the UCLL service in this document, we refer to both the UCLL and SLU (sub-loop UCLL) services as described by their respective STDs, unless otherwise specified.

18. Since 1 December 2011 (the Telecom-Chorus separation date), Chorus has been the owner of the fixed line access network that carries voice and data traffic between local exchanges and end-user premises. This is sometimes referred to as the "copper network" with each individual link referred to as a "local loop".

19. Access seekers, also referred to as retail service providers (RSPs), who wish to offer broadband (internet) services utilising the copper network may do so by purchasing UCLL or SLU (or the unbundled bitstream access (UBA) service) from Chorus. These services are regulated under the Act. An access seeker may take UCLL or SLU and install its own equipment in the exchange or cabinet. This is often referred to as "unbundling". Alternatively, they make take the UBA service, which allows access seekers to offer a broadband service to end-users without needing to install their own equipment.

We determined a benchmarked price for the UCLL service under the IPP in the Act

20. The Act requires us to determine a price for the UCLL services. In the first instance we determined a price under the initial pricing principle (IPP) for UCLL, which required us to set a benchmarked price based on prices in comparable countries.

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2 Commerce Commission "Standard Terms Determination for the designated service Telecom's unbundled copper local loop network" 7 November 2007, Decision 609.

3 Commerce Commission "Standard Terms Determination for the designated services of Telecom's unbundled copper local loop network service (Sub-loop UCLL), Telecom's unbundled copper local loop network colocation service (Sub-loop Co-location) and Telecom's unbundled copper local loop network backhaul service (Sub-loop Backhaul)" 18 June 2009, Decision 672.

21. In 2012 we initiated a UCLL benchmarking review.[4] The purpose of the UCLL benchmarking review was to update the benchmarking data in order to determine UCLL service monthly rental and connection charges and set geographically averaged prices.[5] Our 3 December 2012 price determination for the UCLL service:

    21.1 determined a new geographically averaged price for the UCLL STD of $23.52 per line per month, with the new geographically averaged price to come into effect on 1 December 2014;[6]

    21.2 determined a new geographically averaged price for the SLU STD of $14.21 per line per month, with the new geographically averaged price to come into effect on 1 December 2014;

    21.3 updated the geographically averaged price for the UCLF STD to $23.52 per line per month, with the new price to come into effect immediately (that is, from 3 December 2012);[7]

    21.4 updated the non-urban and urban monthly rental prices in the UCLL STD to $35.20 and $19.08 respectively, with the prices coming into effect immediately and applying until 30 November 2014; and

    21.5 updated the non-urban and urban monthly rental prices in the SLU STD to $21.26 and $11.52 respectively, with the prices coming into effect immediately and applying until 30 November 2014.

We are now required to determine TSLRIC cost-based prices for the UCLL services

22. Subsequently, we received five applications for a pricing review determination in accordance with the FPP. Applications were received from Chorus New Zealand Ltd, Telecom New Zealand Ltd (now Spark New Zealand Ltd), Vodafone New Zealand Ltd, CallPlus Ltd, and Kordia Ltd and Orcon Ltd.[8] For UCLL the FPP is "TSLRIC", which we discuss in Chapter 1.

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4 Under section 30R of the Act and in accordance with the standard terms determination sections of the Act at sections 30K - 30Q.

5 Commerce Commission "Final determination on the benchmarking review of the unbundled copper local loop service" (3 December 2012), NZCC 37, paragraph [32].

6 Telecommunications (TSO, Broadband, and Other Matters) Amendment Act 2011, s 73(3).

7 The UCLFS price was geographically averaged from separation day, 1 December 2011, when the service was introduced.

8 Orcon has since withdrawn its application following its purchase by CallPlus. This has not affected the scope of our pricing review determination.

23. In December 2013, we published a UCLL process and issues paper, which set out and sought views on:[9]

    23.1 our proposed process and framework for the cost modelling and pricing review determination of the UCLL service; and

    23.2 a number of conceptual issues associated with the TSLRIC methodology, including:

        23.2.1 the range of approaches to TSLRIC cost modelling;

        23.2.2 the features and functionality of the UCLL service, and their relevance to selecting the modern equivalent asset (MEA) for our modelling of the service; and

        23.2.3 a range of approaches to key modelling decisions including depreciation, demand, cost allocation, cost of capital and operating expenditure (opex).

24. In December 2013, we also set a new IPP price for the UBA service. We subsequently received five applications for a pricing review determination in accordance with the UBA FPP. Following those applications, we have consulted on issues for the UCLL and UBA services at the same time.

25. On 13 January 2014, we published a supplementary paper to the UCLL process and issues paper, seeking views from interested parties on what happens at the expiry of the UCLL pricing review determination and how the STD prices can be updated in future.[10]

26. In February 2014, we also released a UBA process and issues paper.[11]

[9] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013.

[10] Commerce Commission "Process and issues for determining a TSLRIC price for Chorus' unbundled copper local loop service - supplementary paper on expiry date" 13 January 2014.

[11] Commerce Commission "Determining a TSLRIC price for Chorus' unbundled bitstream access service under the final pricing principle – Process and issues paper" 7 February 2014.

27. During March 2014, we published further consultation papers which sought views on:[12]

    27.1 the role of relativity in our price setting process; [13] and

    27.2 preliminary legal views of our external legal counsel Dr James Every-Palmer on:

        27.2.1 the relevant considerations for determining the MEA for the UCLL service; and

        27.2.2 our discretion to backdate the FPP prices.

28. On 7 March 2014, we published a technical consultation paper on our proposed framework for estimating the weighted average cost of capital (WACC) for the UCLL and UBA pricing reviews. Specifically, the paper:

    28.1 sought views on the approach to estimating certain WACC parameters for the UCLL and UBA services;

    28.2 discussed the linkages with the cost of capital input methodologies (IMs) we determined under Part 4 of the Commerce Act 1986; and

    28.3 highlighted issues we would be seeking independent expert advice on.

29. Following submissions and cross-submissions on our WACC technical consultation paper, we published advice we had received from:

    29.1 Dr Martin Lally, reviewing submissions on our proposed approach to estimating the cost of debt; and

    29.2 Oxera Consulting (Oxera), reviewing the company specific components of the WACC for the UCLL and UBA services, such as the asset beta and leverage components.

30. Two workshops were held with Commission staff, on 19 December 2013 and 28 March 2014, to assist interested parties with developing their understanding of TSLRIC. On 9 April 2014, we held a modelling methodology presentation for interested parties with our external consultants, TERA Consultants (TERA), where they shared its knowledge and experience regarding TSLRIC cost modelling processes.

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[12] Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" 14 March 2014, and Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle - supplementary paper" 25 March 2014.

[13] Section 19(b) of the Telecommunications Act 2001, together with Schedule 1, requires us to consider the relativity between the UCLL service and the UBA service regarding the application of section 18.

31. On 9 July 2014, we published a regulatory framework and modelling approach paper, seeking views on the following.[14]

    31.1 Our preliminary view of the regulatory framework for our UCLL and UBA TSLRIC cost modelling exercise, including the role of section 18, our TSLRIC objectives, our requirement to set forward-looking costs and the implications of this on the potential re-use of Chorus' assets, as well as additional legal requirements.

    31.2 Our preliminary views on a number of fundamental assumptions for the development of a TSLRIC cost model for the UCLL and UBA services, including the choice of the MEA, demand, depreciation, tax, price profiles, and cost allocation.

    31.3 Our preliminary views on backdating and the length of the regulatory period.

    31.4 Our updated process, which we updated in response to:

        31.4.1 concerns raised by parties during the March 2014 consultation; and

        31.4.2 requests to consider additional matters as part of the TSLRIC cost modelling exercise.

    31.5 Expert papers prepared by Professor Ingo Vogelsang and TERA.

32. We published an open letter to parties on 5 September 2014 in response to concerns expressed in submissions and cross-submissions to our July 2014 regulatory framework and modelling approach paper. It stated:

> Although at this stage we have not elected to adopt as lengthy a process as advocated by some parties, we have planned the delivery of the FPP prices carefully, and have done so in a way which enables us to share our thinking as it develops and evolves. Different countries approach TSLRIC exercises differently. The length of the processes we have observed has varied, depending on the extent to which models include bottom-up as well as top-down elements, the extent of optimisation of networks modelled and the extent to which each country prioritises consultation with industry participants. One party pointed to the TSLRIC cost modelling exercise undertaken by the DBA to illustrate an appropriate process timeframe. When considering submissions, we were unconvinced that the DBA process was a useful a comparator, as it involved modelling three network technologies (copper, fibre and cable-tv), and involved additional consultation steps with the European Commission and other EU Member States. We also discovered that on another occasion, the DBA undertook a TSLRIC process in considerably less time than we have set out to do (around 12 months).

[14] Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014.

So far, we have conducted a number of consultation rounds throughout the UCLL and UBA FPP price review determination processes. In doing so (and as is often the case in other Commission projects) we have consulted more extensively than the statutory requirements in the Telecommunications Act. We have shared aspects of our framework as it has emerged and developed, and shared a more complete picture as some of our views have crystallised. We have shared and tested our thinking on fundamental modelling choices prior to beginning modelling. We have also consulted on a number of additional matters such as asset reuse – in fact, all of our thinking to date at the last consultation phase. Further consultations will be occurring over the coming months, including on our proposed approach to service transaction charges. This approach to consultation has been adopted to assist parties with developing their understanding and engaging throughout the process, rather than working in isolation and sharing our fully developed thinking at draft determination stage. Incremental consultation has also been very helpful for us in terms of testing our thinking prior to commencing modelling. For example, stakeholder submissions on our July 2014 regulatory framework and modelling approach consultation paper have directly contributed to further refinement of that framework/approach.

33. Following our consultation on the July 2014 regulatory framework and modelling approach paper we began modelling the TSLRIC cost of the UCLL service.

Development of our TSLRIC models

34. Building a TSLRIC model is a significant undertaking. We appointed TERA to develop our TSLRIC models for us given its recent experience in building TSLRIC models in other jurisdictions such as Ireland and Denmark.[15] TERA were selected for the role after the following process:

    34.1 We issued a request for proposals (RFP) for modelling consultants on 22 January 2014, asking for proposals by 14 February 2014.

    34.2 Following review of proposals by Commission staff, and input from a co-opted Australian Competition and Consumer Commission (ACCC) staff member, we identified a shortlist of consultants to interview in Wellington in the week of 10 March 2014.

    34.3 Based on these interviews, we identified TERA as our preferred consultant.

[15] We have a TSLRIC model for the UCLL services and a TSLRIC model for the UBA service. The latter is discussed in the Draft pricing review determination for Chorus' unbundled bitstream access service.

35. Following initial meetings with TERA in Wellington in the week of 7 April 2014, which also included a presentation by TERA of its modelling approach to industry participants, we asked TERA to develop:

    35.1 a TSLRIC literature review on UBA and UCLL costing, which we published on 23 June 2014;[16] and

    35.2 an expert report, which we released in July along with our regulatory framework and modelling approach paper.[17]

Other data used as part of our pricing reviews

36. We sourced information from a number of external parties to provide inputs for our TSLRIC model. These included:

    36.1 geospatial data from Corelogic and Landcare Research;

    36.2 trenching and duct cost data from Beca; and

    36.3 price trend data from Statistics New Zealand, World Bank, NZIER and Bloomberg.

37. As part of our modelling, we also sourced data on Telecommunications Service Obligation (TSO) areas from internal analysis that we carried out on TSO areas.[18]

38. We sourced extensive information to assist with modelling from a number of parties, including Chorus, by way of notices for information issued under section 98 of the Commerce Act 1986.[19]

Confidentiality

39. We have outlined the steps we have taken to protect confidential information collected as part of our process, and how confidential information is treated in our models in Attachment M.

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16 TERA Consultants “TSLRIC literature review on UBA and UCLL costing approaches” June 2014.

17 See TERA Consultants "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services: - Modern Equivalent Assets and relevant scenarios" July 2014.

18 See Commerce Commission “Determination for TSO Instrument for Local Residential Service for period between 1 July 2002 and 30 June 2003” (24 March 2005).

19 Section 98 of the Commerce Act 1986 applies under section 15(f) of the Telecommunications Act 2001.

Consultation process on non-recurring charges and backdating

40. On 25 September 2014, we released a consultation paper on our proposed approach to setting prices for the service transaction charges, which are some of the non-recurring charges in the UCLL STD. The paper set out our preliminary views, and sought submissions, on:

    40.1 the non-recurring charges for which we can set prices in the FPP process;

    40.2 the appropriate approach to setting prices for the non-recurring charges; and

    40.3 whether we can merge some non-recurring charges into other charges.

41. We are grateful for the submissions received and are considering them before modelling the non-recurring charges. There are important and complex issues involved and we agree with parties that we should take time for consideration. We also do not want to hold up the release of this draft determination on the monthly recurring charges. Accordingly, we have decided to release a supplementary draft determination addressing non-recurring charges at a later date.

42. In our July 2014 regulatory framework and modelling approach paper we also indicated our intention to reach a preliminary decision on backdating in our draft determination.[20] As we now intend to release a supplementary draft determination on non-recurring charges, we intend to release a preliminary decision on backdating at the same time. Having draft prices for non-recurring charges will allow us to have a more complete understanding of the impact that any backdating would have on end-users.

43. In our July 2014 regulatory framework and modelling approach paper, we expressed a view that we are not required to backdate our pricing review determinations, but that we have discretion to do so.[21] We stated that our decision regarding whether to backdate will be made in accordance with the criteria we identified in that paper:[22]

    43.1 The section 18 purpose statement will provide us with the most important guidance.

    43.2 In particular, any decision to backdate will need to be demonstrably efficient.

    43.3 Likewise, a backdated sum payable to the access provider (either as a lump sum, or “smoothed”), or a backdated price reduction in favour of access seekers, would need to demonstrably promote competition in a way that is likely to directly benefit end-users.

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[20] Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [300].

[21] Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [298].

[22] Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services” 9 July 2014, paragraph [299].

44. We remain of the view that we cannot make a final decision on backdating until the relevant final pricing review determinations are made.[23] We note that potential options for backdating include:

    44.1 The final prices could be backdated to take effect from the date of this draft determination (2 December 2014) or, in the case of non-recurring charges, the date of our supplementary draft determination.[24]

    44.2 The final prices for UCLL, SLU and UCLF could be backdated to take effect earlier, potentially back to the date of the IPP re-benchmarking decision (3 December 2012).

    44.3 Not backdating any final prices, so that they come into effect on the date of the final determination.

Our further updated process for the UCLL FPP determination

45. Our indicative dates for the UCLL FPP process are set out below:

Next steps	**Indicative date**
Submissions on monthly charges draft determination due	23 January 2015
Cross-submissions on monthly charges draft determination due	19 February 2015

46. Provided the current indicative timetable does not shift, we intend to hold a conference in March 2015. We will provide a further update of our process shortly, including indicative dates for our process on non-recurring charges and backdating.

[23] Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle - supplementary paper" (25 March 2014), paragraph [7]; Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services " 9 July 2014, paragraphs [289] and [299].

[24] The final UBA prices could be backdated to take effect from 1 December 2014, but no earlier. Section 77(2) of the Telecommunications (TSO, Broadband and Other Matters) Amendment Act 2011, s 77(2) provides for the price for UBA that was set under the previous 'retail-minus' pricing principle to be frozen in place from three years from the day Chorus separated from Telecom (now Spark). The new prices for UBA (either IPP prices or FPP prices) cannot take effect earlier than 1 December 2014.

Structure of this paper

47. The main body of this draft determination has three chapters:

    47.1 Chapter 1 outlines the regulatory framework under which we are required to set a TSLRIC price for the UCLL service.

    47.2 Chapter 2 explains our approach to determining the cost of providing the UCLL service. We describe the steps we have taken to determine the annualised TSLRIC cost, and summarise the decisions we have made at each step.

    47.3 Chapter 3 explains how we propose to convert TSLRIC costs into a monthly unit price, and set the prices for the UCLL STD and SLU STD services that we consider best give, or are likely to best give, effect to the section 18 purpose statement, having considered matters including relativity.

48. The attachments to this draft determination then discuss in more detail our proposed approach, and reasons for our approach, to determining key inputs to our TSLRIC model.

49. Attached to this paper, we have also published a number of papers prepared by our expert consultants, including:

    49.1 a model reference paper, a model specification paper (public and confidential versions), and a model documentation paper (public and confidential versions) prepared by TERA;

    49.2 a paper outlining the corridor cost analysis of trenching and ducting rates in NZ prepared by Beca; and

    49.1 a paper outlining current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand, and a report on several submissions in the FPP proceeding for UCLL prepared by Professor Ingo Vogelsang.

50. A separate paper explaining how we have calculated the WACC for the UCLL and UBA services has been published alongside this draft determination. Attached to this paper, we have also published paper prepared by our expert consultants, including:

    50.1 a review of expert submissions on the WACC for UCLL/UBA prepared by Oxera; and

    50.2 a review of responses to an earlier review of submissions on the cost of debt and the TAMRP for UCLL and UBA services prepared by Dr Martin Lally.

We are interested in your views

51. In this draft determination we have provided an updated framework that differs from what we published in our July 2014 regulatory framework and modelling approach paper. We have outlined our views on how section 18 affects our key draft decisions. We are interested in your views on what additional role section 18 may play in the draft decisions outlined in this draft determination.

52. We would like to know your views on our draft decisions in this paper. By providing your views, you will help us finalise the approach we take to our TSLRIC cost modelling exercise for the UCLL service.

53. Submissions are due by 5pm on 23 January 2015.

54. Cross-submissions are then due by 5pm on 19 February 2015.

55. Please address responses to: Tricia Jennings (Project Manager, Regulation Branch), c/o telco@comcom.govt.nz

56. All submissions must be provided electronically in a format suitable for word processing. We intend to publish all submissions on our website. If you would like the published electronic copy to be 'locked' then we ask that you provide multiple versions of your submissions. At least one version should be provided in a file format suitable for word processing, rather than a locked PDF file format.

Preserving the confidentiality of your submission

Submitters that are parties under the section 100 orders

57. When seeking protection for information contained in submissions as restricted information (RI) or confidential information (CI), or where submissions contain any protected information (RI or CI) under the section 100 orders, parties under the orders must comply with the processes set out in the orders.[25]

Submitters that are not parties under the section 100 orders

58. While we discourage requests for non-disclosure of information you provide to us, we recognise that there may be cases where you wish to provide information in confidence. We offer the following guidance:

    58.1 Confidential information in submissions should be clearly marked.

    58.2 Both confidential and public versions submission should be provided.

    58.3 The responsibility for ensuring that confidential information is not included in a public version rests entirely with the party providing the submission.

[25] For more details on our confidentiality processes see Attachment M.

Chapter 1: Our framework for carrying out the UCLL pricing review determination

59. This chapter outlines the regulatory framework under which we are required to set a TSLRIC price for the UCLL service. In this chapter we address:

    59.1 the legal requirements and constraints we face under the Act, and

    59.2 the objectives and considerations to which we will give weight when exercising our judgement.

60. We first discuss the requirement to determine a price in accordance with the Act's definition of TSLRIC, and our approach to TSLRIC. We will model the forward-looking costs of an efficient operator over the long run using the concept of a MEA

61. We also discuss the requirements to consider the section 18 purpose statement and make a determination we consider best gives, or is likely to best give, effect to the section 18 purpose statement. The purpose statement provides that the purpose of the relevant parts of the Act is to promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand by regulating the supply of certain services between service providers.

62. We then discuss the other legal requirements of ensuring no double recovery of costs under clause 4B, setting prices that apply throughout the geographical extent of New Zealand, and setting an expiry date for this pricing review determination.

63. Finally, we discuss the matters that affect the MEA we will use to model forward-looking efficient costs over the long run.

We must determine a price in accordance with TSLRIC

64. The Act requires us to determine prices for designated access services, including the UCLL service, in accordance with Schedule 1 of the Act.

65. In this pricing review determination we must apply the FPP. More specifically, the Act requires that: [26]

> The draft pricing review determination must include—
>
> (a) the price payable for the designated access service, which, in the opinion of the Commission, is determined in accordance with—
>
> (i) the applicable final pricing principle (as affected, if at all, by clause 2 or clause 3 of Schedule 1);[27]

[26] Telecommunications Act 2001, s 49(A). For our final determination, Telecommunications Act 2001, s 52(a) contains the same requirement. The provision also mentions "any regulations that relate to the applicable final pricing principle or, if there are no regulations, any requirements of the Commission". There are no such regulations and no requirements of the Commission other than those set in this determination.

66. The Act requires us to form our own opinion of what is "in accordance with" the FPP.

67. The FPP for the UCLL service is TSLRIC.[28]

68. TSLRIC is an abbreviation for an economic concept: 'total service long run incremental costs'. The Act provides us with a particular definition of "TSLRIC": [29]

> **TSLRIC**, in relation to a telecommunications service,—
>
> (a) means the forward-looking costs over the long run of the total quantity of the facilities and functions that are directly attributable to, or reasonably identifiable as incremental to, the service, taking into account the service provider's provision of other telecommunications services; and
>
> (b) includes a reasonable allocation of forward-looking common costs.

69. The Court of Appeal recently commented, in Chorus' challenge of our IPP determination for the UBA service, that:[30]

> The TSLRIC model provides an estimate of the costs of an efficient access provider over a sufficient period of time (long run), on a "forward-looking" basis (reflecting the notional costs to an operator if it built a new network) rather than of Chorus's actual costs.

70. As outlined in the December 2013 UCLL process and issues paper, the definition of TSLRIC in the Act is broad and provides limited practical guidance on the various choices that need to be made when undertaking a cost modelling exercise.[31]

71. There are a number of different options for modelling the costs of the UCLL service that would be consistent with the Act's definition of TSLRIC. Although the Act provides us with some guidance, we must exercise our judgement in choosing among those options.

72. As we explain later in this chapter, the requirement to set a price in accordance with TSLRIC has led us to model the costs of a MEA as the basis for setting the price.

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27 Telecommunications Act 2001, Schedule 1, clause 2 provides that the Baumol-Willig rule does not apply. We have not applied the Baumol-Willig rule. Schedule 1, clause 3 does not affect the FPP, as it only applies to retail-minus prices.

28 Telecommunications Act 2001, Schedule 1, Part 2, Subpart 1.

29 Telecommunications Act 2001, Schedule 1, clause 1.

30 *Chorus v Commerce Commission* [2014] NZCA 440 at [30].

31 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [56].

The Act's definition of TSLRIC contains several elements

73. The Act's definition of TSLRIC contains several elements, being:

    73.1 forward-looking costs,

    73.2 over the long run,

    73.3 of the total quantity of the facilities and functions,

    73.4 that are directly attributable to, or reasonably identifiable as incremental to, the service, taking into account the service provider's provision of other telecommunications services, and

    73.5 a reasonable allocation of forward-looking common costs.

74. We discuss each of those elements further below. We have considered these elements in compiling our framework for determining a price in accordance with the FPP.

Forward-looking costs

75. The Act does not define forward-looking costs.

76. In 2002, we defined forward-looking costs as:[32]

> …costs that will be incurred in the future in providing the service. This involves estimating costs on the basis of current and future prices of inputs and given the availability of modern technologies and assets. The aim is to estimate the cost of providing the services in the future rather than the past.

77. In the December 2013 UCLL process and issues paper, we defined the concept of forward-looking costs as follows:[33]

> Forward-looking costs reflect the costs that a network operator would incur if it built a new network today using assets collectively referred to as the modern equivalent asset, which we discuss further below. The costs of these assets are the costs of currently available equipment as opposed to the costs of older equipment that may actually still be in use.

78. The requirement to base our price on forward-looking costs influences a range of decisions. It is a key factor leading us to model the costs of a MEA, as we focus on what is a *modern* equivalent that a hypothetical operator would build today, and do not consider historical technology choices.

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[32] Commerce Commission "Application of a TSLRIC Pricing Methodology - Discussion Paper" (2 July 2002), paragraph [32].

[33] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [68].

Over the long run

79. "Long run" means that costs are to be considered over a sufficient time horizon such that the service provider can optimise the way the service is delivered.[34] Over this timeframe, all factors of production including capital equipment are variable in response to changing demand. All costs are considered variable costs in the long run.[35]

Total service, incremental costs

80. The "total quantity of facilities and functions" refers to the total inputs required to supply the total quantity of the service by the network operator.[36] The total quantity includes the quantity supplied to the various access seekers and the quantity the network operator supplies to itself. This means that the TSLRIC is different from the incremental cost the network operator incurs in supplying the last unit of the service, or the incremental cost of providing the service to one particular access seeker.[37]

81. The description of costs "directly attributable to, or reasonably identifiable as incremental to, the service" refers to costs that are incurred for supplying the service as a whole over and above the network operator's other costs. In the long run, where all costs are variable, incremental costs can also be considered as the avoidable costs, ie the costs that would be avoided by not providing the service. In this case the increment is the total output of the service. The costs included in the analysis are the efficient set of costs required to supply the service.[38]

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[34] Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [96.2].

[35] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [66].

[36] Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [96.1].

[37] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [65].

[38] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [67].

82. The Act's definition of TSLRIC also requires that "the service provider's provision of other telecommunications services" should be taken into account to determine what costs are directly attributable to, or reasonably identifiable as incremental to, the service we model. This leads us to assume that the hypothetical network operator that we use for cost modelling will provide other telecommunications services, in addition to the UCLL service for which we are modelling the TSLRIC cost. This affects how we identify incremental costs, and how we allocate shared costs and common costs (discussed under the next heading below). To determine what those other telecommunications services are, we have chosen to look to the mix of services that Chorus provides when considering what would be present in a hypothetical efficient operator's business. Accordingly, we assume that a hypothetical efficient operator would use its network infrastructure assets (eg trenches and ducts) to provide other telecommunications services, such as leased line services with dedicated capacity for commercial end-users, High Speed Network Service (HSNS) and mobile site backhaul.

83. We note that the Act's definition of TSLRIC refers to the costs of the "service provider" and not the "access provider". The term "access provider" is used in the Act's descriptions of the regulated services, where for many services Chorus is identified as the "access provider". The use of "service provider", and not "access provider" in the definition of TSLRIC reinforces the view that we are not required to model Chorus' actual costs.

84. In addition to costs that are directly attributable to the service, the definition of TSLRIC refers to an allocation of forward-looking common costs, which are discussed next.

Reasonable allocation of forward-looking common costs

85. The Act's definition of TSLRIC covers both:

    85.1 incremental costs (as described in paragraph (a) of the definition and as described above), and

    85.2 a reasonable allocation of forward-looking common costs (paragraph (b) of the definition).

86. In this section we explain the requirements to be met in allocating forward-looking common costs. The details of the approach we have taken to allocating costs is discussed later in this draft determination. We use the following terminology when talking about forward-looking common costs:[39]

86.1 We generally use the term "common costs" to refer to costs not directly attributable to any individual service or sub-group of services; they are attributed to *all* services. An example is corporate overheads.

86.2 We generally use the term "shared costs" to refer to costs not directly attributable to any individual service, but that can be attributed to a sub-group of services (rather than to all services). An example is the cost of an active cabinet, as not all services will use the active cabinet.

87. The Act also provides a definition of forward-looking common costs:

> **forward-looking common costs—**
>
> (a) means those costs efficiently incurred by the service provider in providing the service that are not directly attributable to providing an additional unit to that service; but
>
> (b) does not include any costs incurred by the service provider in relation to a TSO instrument

88. Accordingly, under limb (b) we must include a reasonable allocation of costs:

88.1 efficiently incurred, but

88.2 not directly attributable to providing an additional unit to that service.

89. First, we are only required to allocate common costs that would be efficiently incurred by the service provider. This means we will allocate the likely common costs associated with the hypothetical network that a hypothetical efficient operator would build. As noted above, this includes the operator providing a mix of other telecommunications services using its infrastructure. It is open to us to look to Chorus' actual network and actual costs, and in a number of instances we do. However, we are not required to set a price based on Chorus' actual costs (though we discuss clause 4B below).

90. In allocating the shared costs of the hypothetical network, we will consider what other services the hypothetical efficient operator would provide. These shared costs include the cost of network infrastructure assets used for multiple services.

[39] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [69].

91. Second, we need to identify costs that are **not** directly attributable to providing an additional unit to that service. Those costs are the 'forward-looking common costs', relevant to paragraph (b) of the definition of TSLRIC. Forward-looking costs that **are** directly attributable to, or reasonably identifiable as incremental to, the service are included in paragraph (a) of the definition of TSLRIC. Together this covers all relevant forward-looking costs.

Costs incurred in relation to a TSO instrument

92. Limb (b) of the Act's definition of "forward-looking common costs" provides that they do not include "any costs incurred by the service provider in relation to a TSO instrument". We have considered the meaning of limb (b). Before discussing that meaning, we first set out a brief explanation of the TSO instruments.

93. The term "TSO" is an abbreviation of "telecommunications service obligations", which the Act defines as "obligations in relation to a TSO instrument".[40] The relevant TSO instruments are:[41]

    93.1 the 'TSO Deed for Local Residential Telephone Service' (which we refer to here as the **Spark Deed**), and

    93.2 the 'TSO Deed for TSO Network Services' (which we refer to here as the **Chorus Deed**).

94. In essence, the obligations that arise from those TSO instruments ensure the provision of a residential voice service on certain lines. The provision obligations are split between Chorus, who provides the underlying connection to the end-user in accordance with the Chorus Deed, and Spark, who provides the voice service across Chorus' network in accordance with the Spark Deed.

[40] Telecommunications Act 2001, s 5.

[41] See www.med.govt.nz/sectors-industries/technology-communication/communications/telecommunications-service-obligations. There is also a TSO Deed for Telecommunications Relay Services, between the Crown and Sprint International New Zealand, which is not relevant to the UCLL service.

95. The Chorus Deed contains the following principles:[42]

95.1 *Principle 1*: Chorus will charge Spark no more than an amount equivalent to the regulated price of Chorus' unbundled copper low frequency (**UCLF**) service[43] (as amended from time to time) for the "TSO network service", which is the baseband service Chorus provides to Spark as the input service for use by Spark in providing the local residential telephone service under the Spark Deed. Chorus will charge Spark no more than that amount provided that the overall profitability of "Chorus' fixed business" is not or will not be unreasonably impaired (as evidenced by audited accounts prepared for that business). Chorus may selectively offer lower prices, including on a geographical or customer segment basis, if it wishes.

95.2 *Principle 2:* Chorus will make the "TSO network service" as widely available to Spark as Spark is required to make the local residential telephone service available under the Spark Deed. In turn, the Spark Deed states that Spark will continue to make local residential telephone service as widely available as it was at 20 December 2001 – that area is known as the 'TSO footprint'.[44] Accordingly, the TSO footprint is a subset of the total connections in Chorus' access network, as all business connections and any residential connections after 20 December 2001 are not included in the TSO footprint.

96. The Chorus Deed, together with provisions in the Act,[45] provide a mechanism for Chorus to potentially recover any additional costs incurred in providing the TSO network service that it does not recover by charging an amount equal to the regulated price for UCLF. (The regulated price for the UCLF service for relevant purposes is the regulated price under the UCLL STD, which is one of the UCLL service prices we are currently setting.)[46] Chorus can apply to be able to charge more for the TSO network service, if it considers that the overall profitability of its fixed business has been, is being, or will be unreasonably impaired.[47] If Chorus did so, we would be required to determine those costs of complying with the TSO instrument and record them in a cost calculation determination.[48] Those additional costs, which are known as 'TSO charges', are then payable by the Crown to the service provider (Chorus) to compensate it for the additional costs above the UCLL STD price of providing the service.[49]

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42 See clause 5 of the TSO Deed for TSO Network Service (8 November 2011), accessible from the link in the footnote immediately above.

43 The UCLF service is described at paragraph 106 below.

44 TSO Deed for Local Residential Telephone Service (8 November 2011), principle 3 at clause 5.3.

45 Telecommunications Act 2001, ss 71A, 94, 94C and 94D.

46 Telecommunications Act 2001, Part 2, Subpart 1, description of Chorus's Unbundled Copper Low Frequency Service.

47 TSO Deed for TSO Network Service (8 November 2011), clauses 7-12.

48 See Telecommunications Act 2001, Part 3, Sub-part 2, and particularly ss 94 and 94K.

49 Telecommunications Act 2001, s 94L.

97. Our preliminary view is that limb (b) of the Act's definition of "forward-looking common costs" is intended to make it clear that if Chorus receives a TSO payment, then the corresponding TSO costs must be excluded from the TSLRIC calculations for the UCLL service as otherwise they would be recovered twice.

98. We consider this interpretation is supported by the legislative and policy history. Limb (b) of the Act's definition of "forward-looking common costs" has remained unchanged since the Act was originally enacted in 2001. The Act followed the Fletcher Inquiry, which reported in September 2000. At the time of the Fletcher Inquiry, the TSOs were called the Kiwi Share obligations, or KSOs. The Inquiry said:[50]

> *Kiwi Share Losses*
>
> … the Inquiry recommends that in all cost-based pricing determinations on Telecom's fixed network no recovery of Kiwi Share obligation losses be incorporated. This means that, in the benchmarking exercises, any additions countries make to call related prices to recover access deficits or universal service losses should be removed, and nothing added for any KSO losses. Similarly, in any TSLRIC modelling the KSO losses should be deducted from total network costs and the number of residential local calls should be included in usage even though they are free.

99. It went on to recommend:

> 20. Cost-based prices should not include a contribution to any losses arising from Telecom's Kiwi Share obligations.

100. When the Act was originally enacted in 2001, what is now the UCLF service was not a designated service and the price Telecom was permitted to charge under the Deed applicable at the time was based on the standard residential rental price applicable at 1 November 1989 (ie a retail-based price).[51] In addition, Telecom could be paid the net cost of complying with the TSO instrument.[52] Currently, Chorus is receiving the UCLF price for TSO lines, and the UCLF price is the regulated price for the UCLL STD. Unless and until Chorus applies for and receives TSO charges in respect of the Chorus Deed, we do not consider that there are any relevant costs to be excluded under limb (b).

101. An alternative interpretation of limb (b) of the Act's definition of "forward-looking common costs" is that Parliament intended for us to exclude any lines to end-users within the TSO footprint that only deliver voice services from the hypothetical network we use to model the costs of the UCLL service. This approach would be premised on the proposition that lines where Chorus does not offer a broadband service are presumably lines where it is not economic for Chorus to offer broadband services and so it only maintains those lines for the provision of voice service because of its TSO obligations under the Chorus Deed. For the purposes of this discussion only, we refer to those lines as 'TSO lines'.

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50 Ministerial Inquiry into Telecommunications, Final Report, 27 September 2000, p. 69.

51 See Telecommunications Service Obligations (TSO) Deed for Local Residential Telephone Service (December 2001), clause 7.2.

52 Telecommunications Act 2001, as originally enacted, ss 80-94.

102. If we preferred this interpretation, in practical terms it would mean reducing the number of lines within the TSO footprint that are included in the hypothetical network we use to model the costs of the UCLL service, by removing the TSO lines. That would mean that both the common cost (costs not directly attributable) and incremental costs (costs directly attributable) of providing the TSO lines would be excluded. This interpretation would be inconsistent with the fact that limb (b) comes within the definition of 'forward-looking common costs'.

103. Furthermore, excluding TSO lines would appear to create a gap as they would be excluded from the UCLL TSLRIC model even though they are recovered through the UCLF price which is based on the UCLL price. We consider that if Parliament had intended TSO lines to be excluded entirely from our calculation, it would have made this more explicit.

104. In our view the alternative interpretation is unlikely to reflect Parliament's intention. The better interpretation is that limb (b) was included to avoid double recovery and is only relevant where Chorus receives a separate payment for TSO additional costs (ie, the TSO charges). Given that the Act links the price of the UCLF service to UCLL, and that Chorus has not applied to recover TSO additional costs, we are not currently required to address any potential for double recovery in our model.

105. If now or at any time in the future Chorus was receiving TSO charges, then we consider it would be open to us to initiate a section 30R review and consider whether there had been a changes in circumstances necessitating an update of the price of UCLL STD (and therefore UCLF).

The UCLF price

The Act links the price of the UCLF service to the prices we set in this pricing review determination

106. The UCLF service is similar to the UCLL service but it only enables access to and interconnection with the low frequency (being the frequency band between 300 and 3400 Hz) in Chorus' copper local loop network. Broadband cannot be provided over the UCLF service, as bitstream services use higher frequencies.

107. The UCLF service was inserted as a designated access service in Schedule 1 by the Telecommunications (TSO, Broadband, and Other Matters) Amendment Act 2011 (**Amendment Act**) which allowed Chorus to structurally separate from Telecom (now Spark). Telecom was prohibited from purchasing UCLL until 1 December 2014,[53] but was able to purchase the UCLF service. That is, although Spark was unable to unbundle for three years, it could purchase the UBA service to provide broadband to end-users, or purchase the UCLF service to provide voice services (but not broadband) to end-users.

[53] See the "access seeker" description in the description of "Chorus's unbundled copper local loop network" in Subpart 1 of Part 2 of Schedule 1 of the Telecommunications Act 2001.

108. The IPP for the UCLF service is:[54]

> Either—
>
> (a) the geographically averaged price for Chorus's full unbundled copper local loop network; or
>
> (b) if a person is also purchasing Chorus's unbundled bitstream access service in relation to the relevant subscriber line, the cost of any additional elements of Chorus's local loop network that are not recovered by the price for Chorus's unbundled bitstream access service

There are different views about the meaning of the Act's pricing principle for the UCLF service

109. The phrase "Chorus's full unbundled copper local loop network" was introduced by the 2011 Amendment Act; it did not previously appear in the Act.[55] When we first set the price for the UCLF service, before the 2011 Amendments came into effect on 1 December 2011, we set it as the price in the UCLL STD.[56] At that time, the price in the UCLL STD was the price set in 2007 when there were comparatively very few cabinets in Chorus' local loop network.

110. When we later re-benchmarked the prices of UCLL services, we reconsidered what the price for the UCLF service should be. Two key views emerged as to what the Act's pricing principle for the UCLF service required.

111. One view was that the price of "Chorus's full unbundled copper local loop network" refers to the price in the UCLL STD, which is the approach we first took to setting the price for the UCLF service. This is because the word "full" refers to the full-loop of the UCLL service as opposed to the sub-loop of the SLU service. The Act provides a service description for "Chorus's unbundled copper local loop network", which describes both non-cabinetised and cabinetised lines, and we had created separate STDs for UCLL and SLU.

112. The other view was that the price for the UCLF service should be an averaged price for both non-cabinetised and cabinetised lines. Together those types of lines are the "full" unbundled copper local loop network, which was termed full-UCLL. The price for cabinetised lines includes SLU and SLES (that is, the copper feeder from the cabinet to the exchange), being the services needed to connect an end-user to an exchange on the copper network. This means that under this view the prices for SLU and SLES would also become relevant to setting the price for the UCLF service.

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54 Telecommunications Act 2001, Schedule 1, Part 2, Subpart 1.

55 The phrase also appears in the pricing principles for the designated access service: "Local access and calling service offered by means of fixed telecommunications network", but in no other place in the Act.

56 Commerce Commission "Standard terms determination for the designated service of Chorus's unbundled copper low frequency service", Decision 738 (24 November 2011), paragraphs [57]-[63].

113. We took the latter view during our UCLL re-benchmarking process.[57] However, when we came to benchmark the prices, applying the IPP, we found that the benchmarking data did not allow us to distinguish between NCUCLL (non-cabinetised local loop) and full-UCLL prices. As a result, we set a single price for NCUCLL (UCLL STD price) and full-UCLL (UCLF price), without having to resolve the interpretation of the Act's pricing principle for the UCLF service, and noted that the issue was better suited to a TSLRIC FPP process.[58]

We have reconsidered our view

114. Given that this pricing review determination process will have flow-on consequences for the price for the UCLF service, we have reconsidered the meaning of the pricing principle for the UCLF service.

115. We now consider that the better view is that the word "full" was likely intended by Parliament to refer to the full-loop of the UCLL service as opposed to the sub-loop of the SLU service, and that the price for the UCLF service should be the price in the UCLL STD.

116. We consider that, at the time of the 2011 amendments, the word "full" was an established industry term of art used to refer to the full-loop service of UCLL (that is, the loop from the end-user to the exchange on non-cabinetised lines) as opposed to the sub-loop service of SLU between the end-user and a cabinet. This is, for example, the terminology used throughout our SLU STD in 2009. We consider that if Parliament had intended a more significant change – that is, the introduction of a new concept of a full-UCLL price that includes both cabinetised and non-cabinetised lines – then this would have been more clearly expressed in the Act and would have been discussed in the legislative history.

117. Further, we consider that setting a price for the UCLF service equal to the price in the UCLL STD fits better with the rest of the Act and is more likely to give effect to the section 18 purpose statement. That is because setting different prices for the UCLF service and for UCLL STD service could lead to arbitrage. If the price for the UCLF service was greater, RSPs could buy the UCLF service on cabinetised lines and buy the UCLL STD service on non-cabinetised lines, but Spark could not have that advantage during the period it is prohibited from purchasing any UCLL service. In our view, we should, as a general principle, read the words of the Act as being consistent with the section 18 purpose statement.[59]

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57 See, for example, Commerce Commission "Revised view on whether there are reasonable grounds to commence a schedule 3 investigation into the pricing principles for Chorus' UCLF service" (17 August 2012), paragraphs [13]-[14].

58 Commerce Commission "Final determination on the benchmarking review for the unbundled copper local loop service" [2012] NZCC 37 (3 December 2012), paragraphs [308]-[321].

59 *Chorus v Commerce Commission* [2014] NZCA 440 at [153].

Our approach to setting TSLRIC prices for UCLL and SLU is consistent with both views

118. As explained in Chapter 3, we have had to take the TSLRIC cost of the unbundled local loop (ULL)[60] and derive TSLRIC prices for the UCLL and SLU STDs. To do this we have taken an aggregation approach, which is that the price of the UCLL STD service will be equal to the price of the SLU STD service plus the modelled TSLRIC price of SLU backhaul. That is, price of UCLL STD = price of SLU STD + modelled TSLRIC price of SLU backhaul.

119. Given our views above, the UCLF price will be based on the UCLL STD service price.

120. However, we note that as a result of our approach to aggregation (explained in Chapter 3), the same price would apply for the UCLF service even if it was based on full-UCLL. That is, under the second approach discussed above:

    120.1 the full-UCLL price would be a weighted average of the price for NCUCLL (non-cabinetised local loops) and the price for CUCLL (cabinetised local loops);

    120.2 the price for NCUCLL would be the price of UCLL STD service;

    120.3 the price for CUCLL would be the price of SLU STD service + the modelled TSLRIC price of SLU backhaul (noting that SLU backhaul takes the place of the copper feeder in our modelled network);

    120.4 the price for CUCLL therefore equals the price for NCUCLL;

    120.5 the weighted average of NCUCLL and CUCLL is therefore equal to the price of UCLL STD service.

121. Accordingly, setting the price for the UCLF service equal to the UCLL STD price is in fact consistent with both views about the meaning of the Act's pricing principle for the UCLF service given our approach to aggregation. Taking either view would lead to the same result.

122. If there is concern about the Act's pricing principle for the UCLF service, we could consider it as part of a Schedule 3 investigation into the UCLF service.[61]

[60] ULL is not the same as full-UCLL. ULL includes UCLL and SLU, but not SLU backhaul or SLES. Full-UCLL includes all of UCLL, SLU and SLES.

[61] See Telecommunications Act 2001, ss 66(c)(vi) and 68.

Our approach to TSLRIC

123. The definition of TSLRIC in the Act is broad and provides limited practical guidance on the various choices that need to be made when undertaking a cost modelling exercise.[62] In our December 2013 UCLL process and issues paper we noted that there are a range of approaches to modelling the TSLRIC price of a service.[63] In its literature review, TERA Consultants advised us that there are a wide variety of approaches used to implement a TSLRIC methodology for UCLL and UBA by regulatory authorities across Europe.[64] This reflects the reality that TSLRIC is a broad economic concept with differing applications. In this context, we consider that Parliament intended us to exercise our judgement in choosing between the various modelling choices that would be consistent with the Act's definition of TSLRIC.

124. In order to assist us with determining our approach to TSLRIC, we have closely considered the previous TSLRIC cost model we built (for the TSO), and an international body of literature on the various objectives of TSLRIC or outcomes that a TSLRIC-based price may promote.

125. In our December 2013 UCLL process and issues paper we outlined six outcomes of a TSLRIC-based access price that the ACCC considered in 1997.[65] Just as other countries undertake TSLRIC-based price regulation in the context of different market features and different legislation, we have exercised our judgement to choose the objectives on which we place weight when determining a TSLRIC price in our New Zealand context.

126. In our July 2014 regulatory framework and modelling approach paper we expressed our preference to emphasise predictability and efficient investment as objectives of a TSLRIC price. That remains our preference, though we have reconsidered what we consider each objective to be and why we place importance on it, and have stated this below. When determining a TSLRIC price for the UCLL service, we give weight to the following objectives:

    126.1 We consider that we should give weight to choices that provide greater regulatory predictability by generally adopting an approach that is considered to be an orthodox TSLRIC approach internationally.

    126.2 We also consider a TSLRIC-based price should promote efficient investment.

127. We discuss each of these objectives further below.

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62 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [56].

63 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraphs [85]-[86].

64 TERA Consultants "TSLRIC literature review on UBA and UCLL costing approaches" June 2014, page 6.

65 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [58].

We consider we should give greater weight to predictability by preferring approaches that we consider to be orthodox TSLRIC approaches

128. We value predictability in the implementation of TSLRIC. That is, we are concerned with giving a greater weighting to predictability of approach.

129. In doing so, it is important to note that predictability of approach is not synonymous with predictability or certainty of outcome. The Court of Appeal has acknowledged (in the context of Part 4 of the Commerce Act 1986) that certainty is a relative rather than an absolute value and may take time to achieve. Moreover, participants in competitive markets generally face conditions of considerable uncertainty: that is the nature of competition.[66] Participants in both regulated and unregulated markets face uncertainty in many forms, for example, in respect of demand, costs, population movements and technological advances.

130. It is well established in the international economics literature that frequent changes to the regulatory approach taken can lead to a lack of regulatory predictability (often referred to as regulatory uncertainty) which can in turn harm investment incentives.[67] This can be particularly true for regulated industries where the assets are sunk and long-lived, as is the case for many telecommunications assets. The "sunkness" of the assets makes it difficult for the regulated firm to exit the market should those rules change, while their long-lived nature means that their costs must be recovered over multiple regulatory periods. The risk of unpredictable changes in the regulatory environment can harm regulated firms' investment incentives. For example, it might lead to a reluctance of regulated firms to invest in the first place, or lead to socially sub-optimal investment behaviour such as under-investment, investment delay or sequential investment when an immediate or single large investment might be preferable from a social welfare perspective.[68] A lack of predictability can also affect confidence and investment incentives more broadly, not just those of regulated firms.

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66 *Commerce Commission v Vector Ltd* [2012] NZCA 220, 2 NZLR 525 at [34]. See also Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [79].

67 See, for example, section 6.1 of Graeme Guthrie (2006), "Regulating Infrastructure: The Impact of Risk and Investment", *Journal of Economic Literature*, 44(4), 925-972; and section 1.9 of Jean-Jacques Laffont and Jean Tirole (1993), *A Theory of Incentives in Procurement and Regulation*, Massachusetts Institute of Technology.

68 Guthrie (2006), *op cit.*

131. We have also considered the section 18 purpose statement in adopting predictability as an objective. Predictability supports investment incentives (as explained above), which in turn supports competition for the long-term benefit of end-users. When businesses invest in their products and processes, consumers can benefit from, for example, the introduction of new and innovative products and services, improvements in the quality of existing products and services, and through lower cost ways of producing existing products. Ensuring that businesses have incentives to invest is therefore important for the promotion of competition for the long-term benefit of end-users. It follows that giving effect to regulatory predictability is likely to give effect to the section 18 purpose statement. We consider the analysis set out above is supported by the attention drawn to investors' incentives in section 18(2A).

132. To adopt a more predictable approach to implementing TSLRIC, our starting point has been to consider our previous approach to TSLRIC when modelling the TSO. Given this is our first implementation of a TSLRIC model for the UCLL service, we have then drawn guidance from the fact that TSLRIC has been applied as a pricing principle many times in an international context, and this has produced a set of principles developed over time. In our view, predictability will be promoted if we adopt a stable, well established and internationally orthodox approach to TSLRIC, that neither moves away significantly from accepted practice nor quickly adopts the latest cutting-edge economic theory.

133. We consider that predictability is also supported by the Act. Once we complete this pricing review determination, we can update the calculation of the FPP price because of a change in circumstances, as provided in section 30P(1)(a)(ii) (which is discussed further below from paragraph 245). In order to continue to apply the FPP, and not revert to the IPP, the Act limits us to providing an updated calculation of the FPP-based price. The TSLRIC objective of predictability means we would be unlikely to revisit all of the modelling choices made for the initial FPP price, but instead would focus on updating the calculation of the FPP-based price because of a change in circumstances.

134. Some submitters agreed that predictability supports investment and that giving weight to predictability is an appropriate objective (noting that many of these submissions were less supportive of our proposed approach of respecting reasonable investor expectations, which we discuss further below in relation to our approach to section 18).

135. Vodafone submitted that we are required to ensure that our use of TSLRIC "falls squarely within an orthodox understanding of TSLRIC methodology".[69] Chorus submitted that it is important we adopt a "conventional approach" to the implementation of TSLRIC.[70] Network Strategies recommends that we focus on regulatory consistency as a means of ensuring predictability.[71]

136. Spark submitted that we should apply TSLRIC in "an economically 'orthodox' way"[72] and apply TSLRIC consistent with international guidance and recent practice.[73] It acknowledged that "Modelling that is consistent with current evolving international regulatory practice and discourse in the application of TSLRIC adds to predictability".[74] It also referred to "international best practice and thought evolution in TSLRIC implementation".[75]

137. We consider that an orthodox approach is desirable and fundamental to our construct of predictability. We disagree with Spark that this encompasses "recent practice" or adopting "current evolving" practice. We give more weight to tried and tested approaches which have benefitted from repeated interactions over time. We give less weight to leading edge or recent practices that have not yet bedded in, and the results of which are therefore less clear.

We consider that a TSLRIC-based price should promote efficient investment

138. A common theme internationally, and in our previous approach to TSLRIC, is the ability of a TSLRIC price to incentivise efficient build or buy choices.

139. This approach emphasises the use of forward-looking costs, resulting in a price that reflects the efficient costs of building an equivalent service today.[76] The intention is that an access seeker will build an alternative rather than purchase the regulated access only where building is more efficient and therefore is in the long-term best interest of end-users.

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69 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.7(a)].

70 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [216].

71 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p. 12.

72 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [95].

73 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [46].

74 Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraph [46].

75 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [46].

76 For a TSLRIC model this is closely connected to the concepts of MEA and optimisation.

140. For an incumbent considering further incremental investment in its network which is used to provide regulated products, TSLRIC provides for the efficient incremental cost of such investment.

141. Submitters have generally agreed that investment efficiency should be a TSLRIC objective, including Chorus[77] and Spark.[78] Network Strategies noted that Chorus is limited in its ability to invest in new copper deployment, although it also notes that Chorus must maintain its existing copper network.[79] It is this incremental investment for which TSLRIC provides efficient incentives.

142. We have also considered the section 18 purpose statement in adopting the promotion of efficient investment as an objective. Section 18(2) requires us to, when making our overall judgement of what promotes competition for the long-term benefit of end-users, consider efficiencies that will, or will be likely to, result from particular acts or omissions. That makes it clear that considering whether investment is efficient is relevant to considering the section 18 purpose statement. We consider that incentivising efficient build or buy choices is consistent with the section 18 purpose statement, by promoting investment in alternative infrastructure, and in turn promoting competition for the long-term benefit of end-users.

143. Additionally, separate from incentivising build or buy choices, a TSLRIC-based price rewards efficient investment. The TSLRIC price is independent from actual costs, and so provides incentives for Chorus to operate efficiently and consequently, adopt the most efficient mix of capital expenditure (capex) and operating expenditure given its actual network.

144. As Spark submitted:[80]

> In this case, the underlying purpose of the Act (and regulated FPP prices) is to set efficient pricing signals, encouraging efficient provision of the regulated services and efficient investment by Access Seekers and the Access Provider that benefit end users.

145. We are also required to set prices that apply throughout the geographical extent of New Zealand (under clause 4A of Schedule 1 of the Act, which we discuss this further below, from paragraph 220). This affects our objective of broadly promoting efficient investment, as the price can only promote efficient incentive on average.

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77 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)", 6 August 2014, paragraph [215].

78 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach", 6 August 2014, paragraph [27].

79 Network Strategies, "Key issues in modelling UBA and UCLL services", 6 August 2014, section [2.2].

80 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [24].

146. A geographically averaged TSLRIC price for the UCLL service will be above forward-looking costs in low cost areas and below forward-looking costs in high cost areas. Accordingly, TSLRIC cannot act as an efficient benchmark for every line over the entire network. This contrast will be most evident at the extremes of the network. Even so, we expect that TSLRIC will generally provide for the upkeep of the network and equipment and any required expansion across Chorus' actual network. The incremental income covers the incremental costs on average.[81]

We will model the costs of a hypothetical efficient operator, using a MEA

147. A MEA is a modern equivalent asset that an efficient operator would build today to provide the service in question. Identifying and modelling the costs of a MEA is the orthodox approach used internationally to model the forward-looking TSLRIC costs of building and providing a network service. Using a MEA would therefore be consistent with giving greater weight to taking a predictable approach.

148. We will model the TSLRIC price of the UCLL service using the MEA concept. The use of a MEA meets the requirement to determine forward-looking costs over the long run, and the TSLRIC objective of broadly promoting efficient investment.

149. Our conceptual framework for TSLRIC is that the hypothetical efficient operator would operate a newly built network providing the relevant regulated services. The implication of this is that the hypothetical efficient operator is not constrained by the legacy decisions of the incumbent in respect of, for example, network technology, network design, the nature of the assets used and cost structure.

150. However, as we noted in our December UCLL process and issues paper, models which centre on the concept of a hypothetical efficient operator may in practice also include information based on the existing operator's actual cost structures where these are likely to be broadly efficient.[82] Similarly, in practice, elements of the existing network design may also be taken into account, as occurs with scorched node and modified scorched node approaches to network optimisation.

151. We consider that modelling a hypothetical efficient operator operating a newly built network is consistent with the requirement in the Act to model forward-looking costs. The hypothetical efficient operator would incur the current and future costs associated with building, operating and maintaining the network, and this is consistent with a forward-looking pricing basis.

152. Efficiency in respect of our hypothetical operator has various dimensions. One is in respect of the technology choice – our hypothetical efficient operator would choose a network technology that is most efficient in respect of factors such as cost, lifetime and technological performance (we discuss this further in respect of the choice of MEA).

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81 We note here that, in general, the renewal expenditure required to maintain a network is likely to be lower than the replacement cost of a network.

82 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [85.1], footnote 26.

153. Another aspect of efficiency relates to network deployment. While Chorus' current telecommunications network may have been efficiently deployed at the time it was rolled out, it may be that changes such as population movements, new sub-divisions, changes in technology or shifts in demand have led to inefficiencies in the current network design. A hypothetical efficient operator could optimise its new network deployment to efficiently meet expected demand. We consider that it is open to us to optimise a network that ignores real world inefficiencies, such as by using the scorched earth approach to optimisation. We consider that it is equally open to us take the incumbent network and any legacy inefficiencies into account, such as by using the 'scorched node' approach to network deployment.[83] That is, the Act does not prescribe a particular approach in this regard.

154. Efficiency of the hypothetical operator also requires that costs are efficiently incurred. This would, for example, result in the hypothetical efficient operator making decisions to minimise costs, subject to maintaining quality.

155. In this respect we note that Professor Vogelsang has observed that efficient costs under TSLRIC implies that "outdated technologies and inefficiently incurred costs like redundant manpower are not reflected".[84]

156. Orthodox TSLRIC is not intended to be a business plan for building and operating a high-speed nationwide network replacement accounting for resource pressures.

157. Since the telecommunications operator that we postulate in our TSLRIC cost modelling exercise is a hypothetical one, we are not constrained to reflect in our modelling all the realities of the "real world" that a business would face if it was actually building a new network. For example, we can assume that there are no resource constraints, and the hypothetical operator has ready access to labour, capital and other resources (such as pole sharing with the local electricity distribution business for aerial roll-out) required to build and operate the network.

158. We note that we may consider what occurs in the real world to inform our assessment of what decisions a hypothetical efficient operator would be likely to take. We assume that our hypothetical efficient operator is a rational, profit-maximising business. Accordingly, there may be circumstances in which decisions made by other rational, profit-maximising businesses in the real world provide an indicator as to the hypothetical efficient operator's likely response to the same issues. Our considerations on operating expenditure are an example where we have drawn on the real world.

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83 We discuss the approach we have taken to network optimisation in Attachment C.

84 Professor Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand", 8 September 2014, paragraph [39].

159. The hypothetical network is a replacement for Chorus' existing network. Our hypothetical efficient operator is a substitute for Chorus; it does not compete with Chorus. In our December 2013 UCLL process and issues paper we considered that we are required to model and establish the cost of a hypothetical MEA network that is capable of competing with Chorus' UCLL Service.[85] We now consider that was the wrong way of expressing our task and does not reflect how we have in fact approached it. The term "hypothetical new entrant" suggests the operator is entering the market to compete with the incumbent, which is not the case. We prefer the term "hypothetical efficient operator" and this has formed the basis of our approach to conducting a TSLRIC cost modelling exercise.

160. For the avoidance of doubt, we note that some other provisions in the Act (but not the definition of "TSLRIC") separately require us to take account of real world considerations affecting Chorus and end-users of telecommunications services in New Zealand, such as clause 4B and section 18. These are separate and distinct from our application of TSLRIC methodology.

161. We discuss our considerations in selecting a MEA for the UCLL service later in this chapter.

We must make the determination we consider best gives, or is likely to best give, effect to the section 18 purpose statement

162. So far in this framework chapter we have discussed the specific legal requirements that apply because we are conducting a pricing review determination of the UCLL service using the FPP. In addition to those requirements, section 19 applies whenever we make a recommendation, decision or determination under Part 2 of the Act.[86]

163. Section 19(a) requires us to consider the purpose set out in section 18. Section 19(c) then requires us to make the determination that we consider "best gives, or is likely to best give, effect to the purpose set out in section 18".

164. Section 19(b) also requires us to consider any additional matters specified in Schedule 1 regarding the application of section 18. For the UCLL service, that additional matter is the relativity between the UCLL service and the UBA service, which we discuss further below and in Chapter 3.[87]

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85 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" (6 December 2013), paragraph [80].

86 For completeness, we note that section 19 also applies whenever we make a recommendation, decision or determination under Schedules 1, 3 or 3A of the Telecommunications Act 2001.

87 We note this requirement applies because we are setting the price of the UCLL service; it does not apply for all regulated services. This is a qualification to our statement in paragraph [162].

165. Section 18 provides:

> **18 Purpose**
>
> (1) The purpose of this Part and Schedules 1 to 3 is to promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand by regulating, and providing for the regulation of, the supply of certain telecommunications services between service providers.
>
> (2) In determining whether or not, or the extent to which, any act or omission will result, or will be likely to result, in competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand, the efficiencies that will result, or will be likely to result, from that act or omission must be considered.
>
> (2A) To avoid doubt, in determining whether or not, or the extent to which, competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand is promoted, consideration must be given to the incentives to innovate that exist for, and the risks faced by, investors in new telecommunications services that involve significant capital investment and that offer capabilities not available from established services.
>
> (3) Except as otherwise expressly provided, nothing in this Act limits the application of this section.
>
> (4) Subsection (3) is for the avoidance of doubt.

We must exercise our judgement in considering what best promotes competition for the long-term benefit of end-users

166. In Chorus' challenge of our IPP determination for the UBA service, the High Court considered the requirements under section 19 and 18. Kós J noted that the statutory language is "not entirely prescriptive" as to the manner in which section 18 is to be applied[88] and referred to an "area of judgement". Adopting submissions made on behalf of Vodafone, Kós J noted that statutes providing for economic regulation:[89]

> …present a chart of medium scale at best. The exact route to be taken is left to the judgement of the navigator, the decision-maker. Usually, as here, an expert tribunal for that very reason. In such cases, the decision-maker may have an "area of judgement".

167. The Court of Appeal, in upholding Kós J's decision, stated that we make value judgements when considering what best promotes competition for the long-term benefit of end-users. It noted that the language of section 19 - what "best gives, or is likely to best give effect to" the section 18 purpose statement - "reinforces the Commission's role as the arbiter of the value judgements involved under the Act."[90] The Court observed that "this means that Parliament has left it to the Commission to make a further value judgement when considering and applying the s 18 purpose provision".[91]

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88 *Chorus v Commerce Commission* [2014] NZHC 690 at [139].
89 *Chorus v Commerce Commission* [2014] NZHC 690 at [15].
90 *Chorus v Commerce Commission* [2014] NZCA 440 at [49].
91 *Chorus v Commerce Commission* [2014] NZCA 440 at [152].

168. The Court of Appeal also stated that the phrase "best gives, or is likely to best give" recognises that we have a choice between current ("best gives") and future ("is likely to give") assessment.[92] We must exercise our judgement as to how much weight to place on what best promotes competition now, and how much weight to place on what best promotes competition in the future.

Our overall consideration is what promotes competition for the long-term benefit of end-users, and in doing so we consider section 18(2) and (2A)

169. Section 19 requires us to consider "the purpose set out in section 18". That purpose is found in section 18(1), which is:

> … to promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand by regulating, and providing for the regulation of, the supply of certain telecommunications services between service providers.

170. Section 18(2) and (2A) identify particular matters that we are required to take into account when making the overall consideration of what promotes competition for the long-term benefit of end-users.

171. As the High Court observed, section 18(1) is the "dominant" provision in section 18, and that subsections (2) and (2A) "are specified for the purpose of assisting analysis under section 18(1)".[93]

172. Section 18(2) requires us to consider the efficiencies that will result, or will be likely to result, from acts or omissions. We have treated "efficiencies" as referring to static and dynamic efficiencies.

173. Static efficiencies are allocative and productive efficiencies. By contrast, dynamic efficiencies are concerned with new and innovative products and services, or existing ones at better quality, which lead to greater consumer choices and benefits over the long-term.

174. Where there is a trade-off between static and dynamic efficiencies, we generally give greater weight to dynamic efficiencies. This is because of the emphasis in section 18(1) of promoting competition over the long-term. We took that approach in our IPP determination, which was noted by Kós J.[94] As discussed above, we consider efficiencies as part of considering what will result, or will be likely to result, in competition for the long-term benefit of end-users.

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92 *Chorus v Commerce Commission* [2014] NZCA 440 at [152].
93 *Chorus v Commerce Commission* [2014] NZHC 690 at [34].
94 *Chorus v Commerce Commission* [2014] NZHC 690 at [34].

175. Section 18(2A) requires us to consider the "incentives to innovate that exist for, and the risks faced by, investors in new telecommunications services that involve significant capital investment and that offer capabilities not available from established services." A determination that undermines incentives to invest would deter future investment and so would likely undermine competition over the long-term.

We have revised our view on the relationship between section 18 and the consideration of reasonable investor expectations

176. In our July 2014 regulatory framework and modelling approach paper we expressed a view that respecting reasonable investor expectations would give effect to the section 18 purpose statement, as doing so would help build predictability into regulation.[95]

177. Chorus agreed with that proposed approach, noting that our focus on predictability is consistent with the focus of other overseas regulators.[96] Other submissions and cross-submissions raised concerns with our proposed approach of respecting reasonable investor expectations.

178. The major criticisms were that:

178.1 section 18 does not contain a reasonable investor test – Parliament would have chosen different words if it has this in mind, and section 18 can be contrasted with the purpose statement in Part 4 of the Commerce Act;[97]

178.2 by considering a new test as part of section 18, we were detracting from taking a predictable approach;[98] and

178.3 the test itself is unpredictable, as it is unclear who the investors are, what their expectations are, and what will be judged to be reasonable – and all of those are new matters for the Commission to judge.[99]

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95 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services", 9 July 2014, paragraph [86]. See also paragraphs [80] and [125].

96 Chorus "Cross-submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)", 20 August 2014, paragraphs [21]-[24].

97 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraphs [D1.16]-[D1.21].

98 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.41].

99 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.15], [D1.26]-[D1.36].

179. Spark argued that the best way for us to advance predictability and reasonable investor expectations "is to employ those legal and economic tests already outlined in the Act".[100] It was also concerned that applying a further reasonable expectations test "could artificially multiply the influence of this factor… in a way that was not intended by the Act and not applied during the IPP process", and that this would only reduce predictability.[101] It submitted that reference to a subjective view of investors' expectations would undermine, rather than promote, predictability and certainty.[102]

180. CallPlus shared this view, emphasising that "the Act already provides for predictability and certainty of regulatory outcomes, and that importing this separate and new test could in fact reduce predictability".[103]

181. Vodafone made all of the major criticisms summarised in paragraph 178 above. Vodafone also summited that our proposed approach was ranking what was, at best, a relevant consideration read in via section 18(2A) over our primary consideration in section 18(1).[104]

182. Network Strategies submitted that the concept of a 'reasonable investor' to direct modelling choices "introduces considerable uncertainty into multiple aspects of the FPP process. As such it would not serve the purpose of fostering predictability."[105]

183. Overall, we found submissions compelling. We will not use the concept of "reasonable investor expectations" as an independent consideration when considering what best gives effect to the section 18 purpose statement.

184. Despite objections to our discussion of respecting reasonable investor expectations, some submitters agreed that predictability supports investment and thereby helps to promote competition. Giving effect to regulatory predictability is likely to give effect to the section 18 purpose statement of promoting competition.

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100 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [9].

101 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraphs [12]-[14].

102 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [89].

103 CallPlus "Cross-submission on the Commerce Commission's Consultation Paper: Proposed view on regulatory framework and modelling approach for UBA & UCLL services" 20 August 2014, paragraph [2(c)].

104 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.24]. Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [B2.3].

105 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, page [12]. This was endorsed in Vodafone July submission, paragraph [D1.40].

185. Spark appears to support the link between section 18 and predictability.[106] Network Strategies notes that a lack of regulatory predictability can deter investment when investments involve long-lived assets and large capital costs.[107]

186. Vodafone also agreed that a decision that undermines incentives to invest may undermine competition over the long run, and consequently not be in the long-term benefit of end-users.[108] On the other hand, Vodafone states that we have not adequately explained how prioritising predictability is consistent with section 18(1).[109] In a similar vein, Wigley and Company suggest that we have introduced the predictability concept without adequate reasoning.[110]

187. In terms of the distinction between predictability and investor expectations, part of our approach to the application of TSLRIC is to give weight to greater predictability of approach by generally adopting an orthodox TSLRIC approach. We note that this promotes predictability without attempting to identify and give weight to reasonable investor expectations as a separate exercise.

Considerations other than predictability also affect competition for the long-term benefit of end-users

188. Some submitters were also concerned that our July 2014 regulatory framework and modelling approach paper suggested we were elevating reasonable investor expectations, or considerations under section 18(2A), to be of paramount consideration. As we have already noted, Vodafone also submitted that we were ranking what was, at best, a relevant consideration read in via section 18(2A) over our primary duty in section 18(1).[111]

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106 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [79].

107 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p. 11.

108 Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [B1.4]. Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.13].

109 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.21].

110 Wigley and Company "Submission on consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL", August 2014, paragraph [172].

111 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.24]. Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [B2.3]. We will discuss how our FPP price may promote competition for the long-term benefit of end-users in Chapter 3.

189. We agree that our overall consideration is what promotes competition for the long-term benefit of end-users and that in doing so we consider section 18(2) and (2A).

190. There are many matters that affect competition for the long-term benefit of end-users other than predictability, such as efficiencies, incentives to invest (which are affected by predictability as well as other factors) and relativity.

We must consider the relativity between the UCLL service and the UBA service

191. Section 19(b) requires us to consider any additional matters specified in Schedule 1 regarding the application of section 18. For the UCLL service, that additional matter is the relativity between the UCLL service and the UBA service. We will explain our response to this requirement in Chapter 3.

We will consider section 18 throughout the process and again before making our overall price decision

192. The Act directs us to both:

192.1 include in our draft pricing review determination the price payable for the UCLL service, which, in our opinion, is determined in accordance with the FPP, which is the Act's definition of TSLRIC (section 49(a));[112] and

192.2 make the determination that we consider best gives, or is likely to best give, effect to the section 18 purpose statement (section 19(c)). As we have stated earlier, this is a general requirement that applies whenever we make a recommendation, decision or determination under Part 2 of the Act, not just a pricing review determination.

193. We note that the section 18 purpose statement is not simply to promote competition for the long-term benefit of end-users, it is to (emphasis added):

> … promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand **by regulating**, and providing for the regulation of, the supply of certain telecommunications services between service providers.

194. For designated access services, such as the UCLL service, we promote competition by regulating the price access seekers pay the access provider. The Act provides us with specific requirements for how to regulate prices. In this case, we have specific requirements regarding the Act's definition of TSLRIC, avoiding double recovery of costs in terms of clause 4B, determining a geographically averaged price, setting an expiry date and considering the relativity between the UCLL service and the UBA service.

[112] For our final determination, Telecommunications Act 2001, s 52(a) contains the same requirement.

195. The Court of Appeal has confirmed that, as a general principle, we should read such specific requirements as being consistent with the section 18 purpose statement. It stated:[113]

> … it is reasonable to assume that Parliament will have settled on that particular definition because it is consistent with and implements the requirements of the statutory purpose.

196. In the context of the IPP determination, it also stated (footnotes omitted):[114]

> [44] It is also reasonable to assume, on the basis of the principle of statutory interpretation that the provisions of a statute are likely to be internally consistent, that the statutory definition of the UBA price reflects the requirements of s 18, including in particular subs (2A) which was enacted at the same time. In other words, the mandatory requirement for the Commission to carry out the "benchmarking" exercise for the IPP by reference to appropriate "comparable countries" is itself designed to implement the statutory purpose, not to contradict or undermine it.

197. The same could be said, in the context of the FPP, for the requirement to determine a price in accordance with the Act's definition of TSLRIC. The process of setting a price in accordance with TSLRIC is designed to implement the section 18 purpose statement, not contradict it.

198. We remain of the view that we should not disregard TSLRIC objectives purely on the basis that they do not appear in section 18.[115] Adopting a TSLRIC approach will generally not conflict with the section 18 purpose statement because setting a price based on forward-looking, efficient costs will generally promote competition. If and where there is a tension between a TSLRIC approach and the section 18 purpose statement, we consider that section 18 cannot override our need to undertake a TSLRIC exercise.

199. Spark indicated that it agreed,[116] and submitted that "s18 does not override the obligation to first focus on the technical task of determining and modelling the best estimate of efficient forward-looking costs when applying a TSLRIC methodology."[117] Vodafone has submitted that "s 18 considerations cannot displace a proper analytical approach to determining TSLRIC." [118]

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113 *Chorus v Commerce Commission* [2014] NZCA 440 at [153].

114 *Chorus v Commerce Commission* [2014] NZCA 440.

115 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [107].

116 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [36].

117 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [43].

118 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.7]. Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [B1.6]. See Vodafone "Comments on process and issues paper for the unbundled copper local loop (UCLL) final pricing principle" 14 February 2014, paragraphs [C2.12]-[C2.13].

200. In our July 2014 regulatory framework and modelling approach paper,[119] we stated that section 18 may provide guidance at a number of decision points during the TSLRIC cost modelling exercise, including:

200.1 our choices on model design and approach;

200.2 the determination or selection of individual parameters in the cost modelling exercise; and

200.3 selecting a price within any relevant range provided by the modelling.

201. We remain of that view, and explain further below how we have considered and will continue to consider section 18 throughout the process and before making our overall price decision.

We will consider section 18 throughout the process

202. We will consider section 18 throughout the process, but it may not affect every choice we make.

203. Spark had earlier submitted that we should consider the effect of a package of internally consistent modelling choices, not just individual choices.[120] It also submitted that not each and every specific decision must be made to best give effect to section 18. All of the specific decisions throughout the process will impact on the assessment of whether the overall determination best gives effect to section 18. It is that overall outcome that must best give effect to section 18.[121]

204. We agree with the Spark and Vodafone submissions that section 18 may not necessarily have a "discernible",[122] or "separately observable",[123] effect at every decision point during the modelling process. Setting a forward-looking cost-based price promotes competition and promotes efficiencies, so will generally give effect to the section 18 purpose statement.

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119 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [65]. See also Commerce Commission “Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle” 6 December 2013, paragraph [52].

120 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraph [19].

121 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraph [49].

122 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [46].

123 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [D1.7]. Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [B1.6]. See also Vodafone "Comments on process and issues paper for the unbundled copper local loop (UCLL) final pricing principle" 14 February 2014, paragraphs [C2.12]-[C2.13].

205. Wigley and Company submitted that section 18 only applies when we face a plausible range of choices that are all consistent with TSLRIC, when section 18 should be applied to make a choice, and that this comprises two sequential steps.[124] We disagree with the sequential step contention, particularly if it is intended to imply deferring consideration of section 18 until after modelling is complete, as in our view we should consider section 18 throughout, though it may not affect every decision.

206. Frontier Economics, on behalf of Vodafone, Spark and CallPlus, had earlier submitted that if we are faced with a choice of which of two (or more) approaches to follow on a particular modelling method or parameter, we should choose the method or parameter that is more likely to meet the underlying purpose in section 18.[125] Chorus submitted that we should apply a section 18 framework to each choice in the 'decision tree' we face when developing the TSLRIC model.[126] Webb Henderson submitted that we are required to best give effect to section 18 of the Act whenever we exercise a statutory discretion.[127]

207. We agree that we need to consider section 18 throughout, but note that: section 19(c) applies to the overall determination; section 18 may have little to say about technical details; and certain approaches are prescribed by the Act and cannot be overridden by section 18.

We will also consider section 18 before making our overall price decision

208. Section 18 also assists us with making our overall price decision. Section 19(c) requires that we make a determination that we consider best gives, or is likely to best give, effect to the section 18 purpose statement. Considering section 18 throughout the process will assist this, but we will also consider the effect of our package of modelling choices when setting the price.

209. In our December 2013 UCLL process and issues paper we suggested that a TSLRIC model could potentially provide a relevant range, from within which we would need to select a price, and that section 18 could have a role in that price selection.[128] We further explained that a TSLRIC model may provide a point estimate of cost, and a range for the true TSLRIC value could also be derived, for example using a sensitivity analysis or other statistical techniques.[129]

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124 Wigley and Company "Submission on consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL", August 2014, paragraph [138] and Appendix A, paragraph [60(c)].

125 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 7.

126 Chorus "Submission in response to the Commerce Commission's Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 14 February 2014, paragraph [173].

127 Webb Henderson "Memorandum to Vodafone on UCLL and UBA Price Review - Selection of an appropriate MEA" 29 April 2014, footnote 3.

128 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013, paragraph [50].

129 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013, footnote 13.

210. To explain further, our model is based on estimates of the costs of the inputs required to build and operate our hypothetical network/MEA. It also contains a number of other variables, such as asset lives, which are also estimates of what the true values would be if the hypothetical network/MEA were actually built. Accordingly, our model provides us with a central estimate of the 'true' TSLRIC cost for the UCLL and SLU services, from which we might determine a range with an upper and lower bound.

211. Although the model is conceptually capable of expressing a range, we have not done so in this draft pricing review determination, as we explain in Chapter 3. How we consider section 18 and exercise our judgement in determining a price is further discussed in Chapter 3.

Additional legal requirements

212. The Act sets out a number of additional legal requirements that apply when determining FPP prices for the UCLL services, which we now discuss.

We must ensure no double recovery of costs recovered in prices of designated or specified services (clause 4B)

213. Clause 4B of Schedule 1 of the Act provides:

> In applying [the FPP], the Commission must ensure that an access provider of a designated service does not recover costs that the access provider is recovering in the price of a designated or specified service provided under a determination prepared under section 27 or 30M or a designated or specified service provided on commercial terms.

214. We note that the term "access provider" is used in clause 4B. The access provider of the UCLL service is Chorus, so we take into account the prices Chorus receives for the designated and specified services that Chorus provides.

215. The UCLL price we set must not allow Chorus to recover costs that it recovers in the prices of other "designated services"[130] and "specified services"[131] it provides.

216. We will also allocate the costs we are currently modelling for the UCLL service and UBA service to avoid double recovery of those costs in the prices we set for those services. We are well placed to do that given that we are pricing the two services at the same time.

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130 A "designated service" means:

- a "designated access service", which means a service described in subpart 1 of Part 2 of Schedule 1 of the Telecommunications Act 2001; or
- a "designated multinetwork service", which means a service described in subpart 2 of Part 2 of Schedule 1 of the Telecommunications Act 2001. These are: Local telephone number portability service; Cellular telephone number portability service; National toll-free telephone number portability service; and Telecom's fixed PSTN to mobile carrier pre-selection service.

131 A "specified service" means a service described in Part 3 of Schedule 1 of the Telecommunications Act 2001. These are: National roaming; Co-location on cellular mobile transmission sites; and Co-location of equipment for fixed telecommunications services at sites used by Broadcast Communications Limited.

217. The particular steps we have taken to best give effect to clause 4B are explained later in this draft determination (in Attachment L).

218. Clause 4B applies to designated or specified services provided under an STD where a regulated price applies, and designated or specified services provided on commercial terms where an unregulated price applies. Accordingly, if and how Chorus provides designated or specified services on commercial terms will affect the costs allocated to the regulated prices that we set.

219. We note that including a reasonable allocation of the forward-looking common costs of the service provider in the TSLRIC price (which we discussed above from paragraph 85) is additional to this requirement in clause 4B to consider double recovery of particular costs recovered by Chorus. If we were to conclude that a reasonable allocation of the forward-looking common costs of the service provider would lead to Chorus double-recovering costs in terms of clause 4B, then we must not make that allocation of the forward-looking common costs in the TSLRIC modelling.

We must determine a geographically averaged price (clause 4A)

220. Clause 4A of Schedule 1 of the Act provides that, in applying the FPP for the UCLL and UBA services, we "must determine" a geographically averaged price, which is defined in clause 1 of Schedule 1 as follows:

> ***geographically averaged price*** means a price that is calculated as an average of all geographically non-averaged prices for a designated service throughout the geographical extent of New Zealand.

221. Prices for the UCLL service remain geographically de-averaged until 1 December 2014.[132]

222. Clause 4A and the definition of geographically averaged price were introduced by the 2011 Amendment Act to address the inability of a structurally separated Telecom (as Spark was then called) to cross-subsidise urban and non-urban services. Under the TSO, Spark, unlike its competitors, has to provide national pricing for some services, despite facing geographically de-averaged input prices, and therefore has to cross-subsidise services. However, Spark faces profit erosion in this area, and a structurally separated Telecom could no longer cross-subsidise losses between the separate entities of Spark (the new Telecom) and Chorus.[133] Accordingly, we must now set prices that apply throughout the geographical extent of New Zealand.

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132 Telecommunications (TSO, Broadband, and Other Matters) Amendment Act 2011, s 73(3).

133 Report of Finance and Expenditure Committee on Telecommunications (TSO, Broadband, and Other Matters) Amendment Bill 2011 (250-2) (16 May 2011), at p. 19.

223. Turning to the definition of geographically averaged price, we consider that we would only need to calculate the average of geographically non-averaged prices if we had geographically non-averaged prices to begin with. That is, we are not required to first set geographically non-averaged prices, though we may do so as our first step if we chose to. Our interpretation of the definition is what the text and purpose of setting geographically averaged prices requires. In this draft determination we have chosen to begin with geographically non-averaged prices for the UCLL STD price and the SLU STD price, as our first step, as it assists with considering possible backdating earlier than 1 December 2014 (being the date from which geographically averaged prices take effect).

224. In our view, Parliament's reference to calculating an average of geographically non-averaged prices simply reflected the fact that, when clause 4A was introduced, we had been setting non-averaged prices and so averaging them was the easiest and most efficient way to produce the necessary single price. It does not follow that Parliament intended that we should always be constrained to using that method to determine prices that apply throughout the geographical extent of New Zealand, though it is open to us to choose that method.

225. Being required to set prices that apply throughout the geographical extent of New Zealand affects our objective of broadly promoting efficient investment, as we discussed above at paragraphs 145 and 146. The requirement for a single UBA price for urban and non-urban lines has an impact on incentives to unbundle on cabinetised and non-cabinetised lines. We discuss this later in Chapter 3, in relation to setting the price for the SLU service.

We must set an expiry date

226. In this draft determination, we must propose an expiry date.[134]

227. On 13 January 2014 we published a supplementary paper to the December 2013 UCLL process and issues paper with our preliminary views on the effect of the expiry date under the Act.[135] We have re-stated those views here, which continue to hold.

228. The Act is not clear what prices will apply for the UCLL and SLU STDs at the expiry of the UCLL pricing review determination (ie the determination we are currently in the process of making).

229. We would expect to amend the STDs to update the UCLL and SLU prices before the expiry of the pricing review determination, recalculating the price to take effect from the expiry date. This would avoid the STD prices reverting to the IPP price, which otherwise appears to be the effect of having to include an expiry date in the pricing review determination.

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134 Telecommunications Act 2001, s 49(f). In the final determination section 52(f) of the Act requires us to set the expiry date. See also section 62.

135 Commerce Commission "Process and issues for determining a TSLRIC price for Chorus' unbundled copper local loop service - supplementary paper on expiry date" (13 January 2014).

230. The price would be recalculated in accordance with the FPP through sections 30R and 30P(1)(a)(ii) of the Act (that is, we would not revert to the IPP). That updated price would not have an expiry date; there is no expiry for the STDs. We could conduct a further update at any time, as discussed further below.

231. We also consider that we have the ability to update the FPP price to take effect before the pricing review determination expires, either under sections 30R and 30P(1)(a)(ii) of the Act (discussed below) or if we incorporated an updating process into the price review determination itself.

232. Chorus' submission on the December 2013 UCLL process and issues paper sets out its understanding of that proposed approach to the expiry date.[136] We confirmed in our 14 March 2014 Further Consultation Paper that Chorus' submission broadly corresponds with our proposed process on expiry of the pricing review determinations, but that one additional step not set out in Chorus' summary is that it is possible that the UCLL model itself might need to be updated as part of amending the STDs to update the UCLL price before the expiry of the pricing review determination.[137]

233. We set a regulatory period, which has three important roles in a TSLRIC cost model:[138]

    233.1 it is an important input used to estimating the WACC;

    233.2 it sets the timeframe over which we levelise the different yearly prices to be the same price year-on-year (given our preference to do so);

    233.3 it sets the timeframe that the TSLRIC price calculation will be in force. This means the regulatory period sets both the beginning and end dates of the model.

234. The length of the regulatory period does not affect, for example, our view of "forward-looking" in the Act's definition of TSLRIC, or our approach to asset lives or asset depreciation.

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136 Chorus "Submission in response to the Commerce Commission's Process and issues paper for determining a TSLRIC price for Chorus' unbundled bitstream access service in accordance with the Final Pricing Principle" 14 February 2014, paragraph [152].

137 Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" (14 March 2014), at paragraph [6].

138 In our July 2014 regulatory framework and modelling approach paper we stated there were two, but have now separately identified price smoothing as a third. We discussed price smoothing in that paper, at paragraphs [259] and [260].

We propose an expiry date of five years after our final determination

235. We sought views on the length of the regulatory period in our December 2013 UCLL process and issues paper. Most submissions supported a five-year regulatory period. However, Chorus argued that 10 years would be the appropriate length for the regulatory period. This was primarily because, in its view, that length of time would provide more certainty for business planning and investment.[139]

236. Our consultations to date regarding the regulatory period have not included any reference to the possibility of backdating of the determination. Our comments have been based on the assumption that what we referred to as the regulatory period would begin on the date of the final determination. Accordingly, we interpret the submissions on the regulatory period as addressing the issue of the expiry date of the determination, ie, submissions favouring a five-year regulatory period advocate an expiry date five years after the date of the final determination. We consider that backdating, if we decide that it is warranted, should be implemented by a corresponding extension of the regulatory period. In the discussion below we continue to use the term "regulatory period" for convenience but discussion should be interpreted as referring to the length of period from the date of the final determination to the expiry date.

237. In our July 2014 regulatory framework and modelling approach paper, we outlined our preliminary view that:

    237.1 a five-year regulatory period is the most appropriate for our TSLRIC modelling; and

    237.2 we should have the same regulatory period for both the UCLL and UBA services. This is supported by the Act's requirement that we consider the relativity between the UCLL service and the UBA service.[140]

[139] Chorus "Submission in response to the Commerce Commission's Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 14 February 2014, paragraph [23].

[140] Telecommunications Act 2001, s 19(b) and Schedule 1, Part 2, Subpart 1.

238. We outline below the reasons we gave in that paper, with some modifications given that we have further considered the issue and the recent submissions:

238.1 The primary reason is that the telecommunications markets at issue are fast changing, both in terms of technology and the applicable regulatory settings. Accordingly, we consider that a ten year regulatory period would be too long, as inputs used in our cost model and modelling decisions are more likely to become out of date or become less appropriate over ten years compared with five years.

238.2 In 2019, the roll-out of fibre to deliver ultra-fast broadband (**UFB**) will be significantly further advanced and we will have a better idea of the effects of UFB migration on the markets for UCLL and UBA. By then the Government's review of the Act[141] will have been completed and any changes will have taken effect.

238.3 In combination, the above matters also seem to us to suggest that a seven-year period would be too long.

238.4 We also consider five years to be supported by the broader legislative context. The Act does not define how often we should review a STD (or in this case the part of a STD that relates to price). However, it does provide some guidance that suggests a five-year regulatory period is appropriate.

238.4.1 Five years is the period within which we must consider whether to review whether a service should remain regulated. Schedule 3 provides that we must consider:[142]

> … at intervals of not more than 5 years after the date on which a designated service or specified service came into force, whether there are reasonable grounds for commencing an investigation into whether the service should be omitted from Schedule 1 under s 66(b).

238.4.2 Given that the Act requires us to review whether to de-regulate a service within five years, it is appropriate that we should endeavour to review prices in STDs at no longer than five-year intervals.

238.5 We note that section 53M of the Commerce Act 1986 requires every price-quality path to have no longer than a five-year regulatory period. This is more prescriptive than the Act, but it is widely agreed that the telecommunications market is a faster changing market, which supports our view that we should be reviewing STD prices at intervals of no longer than five years.

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141 Telecommunications Act 2001, s 157AA.

142 Telecommunications Act 2001, Schedule 3, clause 1(3).

239. In response to our July 2014 regulatory framework and modelling approach paper, Vodafone[143] and Spark[144] supported our preliminary view of a five-year regulatory period for both the UCLL and UBA services. Chorus stated that it would prefer to have a reasonable period of price stability in order to focus on the UFB roll-out and migration of customers.[145] Chorus re-iterated that it would like a longer regulatory period, and suggested a compromise of seven years, in order to balance regulatory and pricing stability.[146]

240. We consider a five-year period does provide a reasonable period of price stability. We have already noted the Court's comments that participants in competitive markets generally face conditions of considerable uncertainty, as that is the nature of competition.[147] Price stability over five years provides relative stability to suppliers and purchasers.

241. We have explained above that we consider a more predictable approach would *generally* be an approach that is considered to be an orthodox TSLRIC approach internationally. That might suggest a shorter regulatory period as adopted by some international regulators (for example, Sweden, France, Denmark, Ireland and Germany all support a regulatory period of three years or less).[148] However, in this case we consider that a more predictable approach is affected by other considerations, such as the telecommunications framework and New Zealand regulatory practice in other sectors of no more than a five-year regulatory period under Part 4 of the Commerce Act 1986.

242. We have considered submissions, our TSLRIC objectives and the section 18 purpose statement. We have weighed the factors of supporting investment (which supports competition) and taking an approach that provides greater predictability. We propose a five-year regulatory period.

243. We propose to set the expiry date to be five years from the date of our final determination. We have modelled TSLRIC costs over a five-year period.

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143 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, section D2.

144 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraphs [154]-[155].

145 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [176].

146 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [179].

147 *Commerce Commission v Vector Ltd* [2012] NZCA 220, 2 NZLR 525 at [34].

148 Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [321].

244. Prior to the end of the expiry date of the pricing review determination, we will conduct a review under section 30R of the Act, regarding the price payable for the service for the next five-year period (the FPP price reset). As well as considering and determining a price for the service for the next five-year regulatory period, we will update the inputs in our cost model and review whether any other change in circumstances since our previous pricing review determination causes us to reconsider any of our fundamental modelling decisions. The Act defines a "change in circumstances" as follows:[149]

> **change in circumstances**, in relation to the price payable for a service, means any change in relevant circumstances since the last date on which that price was calculated (for example, any change to the terms of the service).

We can review the price during the regulatory period and update the price due to a change in circumstances

245. Within the pricing review determination period, we will still consider reviewing the price in response to a change in circumstances. Under section 30R of the Act, we have the discretion to commence a review of all or any of the terms in a STD "at any time", including terms regarding the price payable.[150] We interpret the Act empowering us to do so "at any time" as including before the expiry date included in the pricing review determination.

246. Without limiting our discretion, we consider that we would be unlikely to revisit all of the choices we made in setting the initial FPP price during the regulatory period of this pricing review determination process.

247. In order to aid predictability of approach, but without limiting our discretion, we note that the following change in circumstances is the sort of scenario in which we may exercise our discretion to update the price: If we were to conduct a section 30R review that resulted in significant changes to the non-price terms of an STD that we consider should be reflected in a change to the price payable for the regulated service.

MEA for UCLL

248. Having decided to use the concept of a MEA to model the TSLRIC costs of providing the UCLL service, we must now determine that MEA.

249. In our December 2013 UCLL process and issues paper, we suggested that TSLRIC requires us to model a hypothetical network that "as a minimum, should provide the same functionality as the existing UCLL service".[151] As we explain in this section, we no longer hold that view.

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149 Telecommunications Act 2001, s 30B.

150 Parties can also apply for us to reconsider a determination under the Telecommunications Act 2001, s 59.

151 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013, paragraph [96].

250. Chorus has submitted that our choice of MEA is limited by the words "the service" in the Act's definition of "TSLRIC", and that we are therefore constrained to a MEA that has the same functionality as Chorus' actual copper network.

251. We consequently sought legal advice on that point, on which we consulted. Dr James Every-Palmer's advice of 12 March 2014 summarised the various interpretations as follows:[152]

> In my view, there are four candidate interpretations for the phrase "the service" in terms of the application of the TSLRIC concept:
>
> (a) the actual service provided by Chorus;
>
> (b) the service described in the relevant STD;
>
> (c) the designated access service as described in Schedule 1; or
>
> (d) a more abstract description of the regulated service that is technology neutral and captures its core functionality.

252. Dr Every-Palmer went on to prefer option (d) above, on the basis that it is supported by a mix of contextual and purposive indicators in the Act, as follows:[153]

> (a) My understanding is that TSLRIC models attempt to determine "the costs that would be incurred by an operator using the most efficient means at any point in time to provide the service" and that this is captured in the expression "forward-looking costs". The reference to costs over the "long run" also points to the ability for all factors of production to be changed.
>
> (b) The TSLRIC approach would normally involve constructing a hypothetical about what would be the efficient cost today for an equivalent service that would not be constrained by the historic technology choices of Chorus (or of end-users) or the details of contingent and technologically dependent obligations like the TSO. In other words, the TSLRIC approach conventionally involves abstracting from the nuts and bolts of the *in situ* service.
>
> (c) The application of the TSLRIC approach would also normally entail a significant degree of choice and judgement including in determining whether to take a top-down or bottom-up approach and the extent of optimisation.

[152] James Every-Palmer "FPP determination: Issues re service description and the modern equivalent asset - a report prepared for the Commerce Commission" 12 March 2014, paragraph [13].

[153] James Every-Palmer "FPP determination: Issues re service description and the modern equivalent asset - a report prepared for the Commerce Commission" 12 March 2014, paragraph [16].

(d) If one of the interpretations (a), (b) or (c) was adopted, the range of options for the Commission's TSLRIC model would be dramatically constrained. That is, rather than exercising its discretion based on s 18 and other relevant considerations to determine an appropriate degree of optimisation, the Commission would be required to adopt an extreme position on the continuum of TSLRIC approaches where there is very little or no optimisation of the current facilities. Accordingly, I see these three interpretations as being at odds with taking a TSLRIC approach to pricing, and in my view, if Parliament had intended such a constrained application of TSLRIC principles it would have used much clearer language.

(e) In terms of the legislative history, I have reviewed the key documents in the legislative history around the 2001 Act and the 2006 and 2011 amendments, and have not found any suggestion that the abstracting process and discretion that would be part of a typical TSLRIC exercise was intended to be restricted in this way.

(f) I also note that the definitions of TSLRIC and forward-looking common costs refer to the "service provider" rather than the "access provider". The Act uses "service provider" generically, whereas it would have been natural to refer to the "access provider" if it was intended to model Chorus' actual network.

(g) The IPP approach of benchmarking against "comparable countries that use a forward-looking cost-based pricing method" also tells against Chorus' approach. That is, an IPP approach based on prices in other jurisdictions, which do not generally depend entirely on historic build choices, would be an odd proxy for the modern cost of Chorus' actual copper network.

(h) To the extent that this approach results in any mismatch between the underlying STD and the TSLRIC price, it may be possible to make price adjustments where the hypothetical service is superior (or inferior) to the actual STD service.

253. In our July 2014 regulatory framework and modelling approach paper, we expressed a view that we intend to consider the efficient cost today for an equivalent service, unconstrained by Chorus' (or end-users') historic technology choices, but capturing the "core functionality" of the regulated service.[154] This approach is what James Every-Palmer states as interpretation (d) – that is, a more abstract description of the regulated service that is technology neutral and captures its "core functionality". The term "core functionality" refers to the essential features of the relevant service, rather than the full functionality of the core network (being the part of the network used by multiple services). In this respect, we note that the existing functionality of the network may or may not be efficient.

254. Chorus' submission recorded its disagreement with Dr Every-Palmer's view. Chorus continues to submit that we must model a service that focuses heavily on the functionality and technology of its existing network. This is consistent with Chorus' broader preference on the nature of our cost modelling exercise, which is to base our modelling closely on its actual network.

[154] Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [105].

255. The interpretation preferred by Chorus focuses closely on the literal words of the Act's definition of TSLRIC, in particular "the facilities and functions that are directly attributable to, or reasonably identifiable as incremental to, the service". These words lead Chorus to focus heavily on the functionality of its existing network, and conclude that the MEA must be capable of delivering the full functionality of the existing STD service, not just its "core functions". Chorus submitted that concepts like "core functionality" do not appear in the Act and cannot be read in.[155]

256. CallPlus took a similar view, suggesting that the modelling of the UCLL service (and UBA service) should be based on the existing footprint of commercially available DSL services, which in its view is consistent with the purpose and context of the Act.[156]

257. We continue to find these submissions unsupported by the statutory language, context and broader scheme of the Act, and therefore unpersuasive. As Dr Every-Palmer suggested, if such an interpretation of the Act was intended, we would have expected Parliament to be clear and unequivocal that this was its intent.

258. Our view, consistent with submitters other than Chorus and CallPlus, is that Parliament intended us to undertake a TSLRIC exercise by building a TSLRIC cost model to determine the costs incurred by a hypothetical operator using the most efficient means at any point in time to provide the service.[157] As Spark put it:[158]

> The difficulty with Chorus' and Callplus' proposed approaches is that, by tying the MEA tightly to characteristics of the current Chorus network and the way in which Chorus provides services today, it artificially bounds the scope for Commission's assessment of efficient costs. This means the Commission can't set a price that best reflects FPP or section 18 outcomes.

259. We continue to consider the contextual and purposive factors Dr Every-Palmer identified to be persuasive. Accordingly, in our view TSLRIC does not require us to be constrained in our modelling choices by Chorus' existing network.

260. We discuss our choice of MEA for the UCLL in Attachment B.

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155 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraphs [9]-[11], [58], [61].

156 Orcon and CallPlus "Submissions by CallPlus and Orcon following the further consultation paper and the workshops" 11 April 2014, paragraph [2.11].

157 See for example Telecom "UCLL and UBA FPP: further consultation and supplementary paper - Submission" 11 April 2014, page 1; Orcon "Cross-submission on the further consultation on issues relating to Chorus' UCLL and UBA services" 30 April 2014, paragraph [7.4]; Telecom "UCLL and UBA FPP: further consultation and supplementary paper - Cross submission" 30 April 2014, page 2 and paragraph [31].

158 Telecom "UCLL and UBA FPP: further consultation and supplementary paper - Cross submission" 30 April 2014, paragraph [15].

Chapter 2: How we have calculated the TSLRIC for the UCLL service

261. In this chapter we discuss our approach to determining the cost of the UCLL service. We describe the steps we have taken to determine the annualised TSLRIC cost, and summarise the draft decisions we have made for each step.

262. We have taken the following steps to determine the TSLRIC for the UCLL service:

    262.1 Step 1 – Determining demand for the UCLL service. In this step we determine the demand footprint over the regulatory period for the UCLL service.

    262.2 Step 2 – Determining the hypothetical network. This step involves determining the MEA for the UCLL service, the degree of optimisation in the modelled network, and how the hypothetical efficient operator would deploy the network.

    262.3 Step 3 – Determining the cost of the modelled network. This step discusses how we have approached costing the network elements of our MEA to provide the UCLL service.

    262.4 Step 4 – Allocating costs to services. This step involves allocating the efficient costs across services provided by the hypothetical efficient operator and then calculating the cost of the UCLL and SLU services, as discussed in Chapter 3.

263. In the following sections of this chapter we summarise the draft decisions we have made under each step. Detailed discussions of our draft decisions are included in attachments to this draft determination.

Determining demand for the UCLL service

Demand footprint

264. The network demand footprint determines the number of connections over which total modelled costs will be spread, and informs where the hypothetical network will be deployed.

265. Having considered submissions on our December 2013 and July 2014 consultations, we now consider the demand footprint for the UCLL service in the context of:

    265.1 Firstly, what is the network demand footprint, for which we consider a geographic boundary; and

    265.2 Secondly, within the network demand footprint, how should we treat demand that resides on the alternate network infrastructure (Hybrid fibre-coaxial (HFC), UFB, Satellite and Mobile).

266. In order to determine a network demand footprint for the hypothetical efficient operator, we considered where the hypothetical efficient operator would be likely to deploy its network.

267. Our understanding is that other jurisdictions model the full cost of the connection base – reflecting a Universal Service Obligation (USO). These jurisdictions require the incumbent operator to maintain a USO (100%) coverage requirement. However, in New Zealand we have a TSO that reflects 100% coverage as at 2001, ie, the TSO coverage is historic not contemporary. We understand we are in a unique position. Although not legally required to, we consider it is appropriate for the hypothetical efficient operator to meet (at least) the coverage requirement that Chorus is obliged to under the TSO. Accordingly, we have used the TSO network coverage as our starting point for where a hypothetical efficient operator would deploy its network, but we have then considered whether the hypothetical efficient operator deploys further, which is typically more remote rural areas.

268. The investment required from the hypothetical efficient operator to serve remote rural connections significantly raises the average cost of supplying the service. We are aware that Chorus requires capital contributions as a condition for connecting remote users, who are generally able and willing to pay for a connection. If a group of customers in a remote rural area paid to be connected to Chorus' network, we would not consider it appropriate to review the UCLL price to include the high costs of serving those end-users in the prices charged to all end-users.

269. Accordingly, we have sought to identify the connections that we consider would fall into this category that we consider to be remote rural. We have developed a proxy, as there is no definitive way to categorise these end-users in any straightforward manner.

270. In doing so, we establish an initial investment boundary round clusters of premises based on the 2001 TSO. As stated above, we consider it is appropriate for the hypothetical efficient operator to invest and maintain TSO connections. However, we were also required to determine whether or not the hypothetical efficient operator would connect premises in addition to the existing TSO coverage. We have reached the preliminary view that additional premises *within* the boundary would be likely to be connected by the hypothetical efficient operator (with both capex and opex being incurred by the hypothetical efficient operator), but premises *outside* would only likely to be connected where a capital contribution was provided by the end-user (with only opex being incurred by the hypothetical efficient operator).[159]

[159] We have also considered whether some properties within the boundary would not be connected absent a capital contribution. In our view, there may be some properties which would fall into this category, but as a counter-balance, there may be some properties outside this boundary which would be connected without capital contributions. We note that it is likely that properties within the boundary will include infill properties for which an efficient operator seeking to gain economies of scale and scope would serve. Consequently we do not propose to exclude any properties within our TSO-derived boundary.

271. We have then considered how to treat demand on other networks. We have reached the following conclusions:

271.1 We have excluded active HFC connections as we consider it to be a competitive platform. Accordingly, we do not think migration to the modelled network would occur.

271.2 We consider UFB networks to be more akin to a replacement, rather than a competitor, to the existing copper network. We have determined that within all UFB regions the MEA for UCLL is fibre. It logically follows that if deployed, the hypothetical efficient operator's network would negate the need for the UFB roll-out. Accordingly, we agree with TERA that it is appropriate for all end-user demand within UFB regions to be modelled and included in our unit cost calculations.[160]

271.3 While satellite is a competing access network to copper in rural areas, it is not in our view a close substitute to our hypothetical MEA network. Accordingly, the costs and associated volume of end-users that have both a copper and satellite connection will be included in the model.

271.4 We have excluded mobile and non-RBI fixed wireless substitution, as we are not convinced that there is material volume.

Demand take-up and migration

272. Demand take-up and migration is relevant for calculating unit costs over time and our modelling assumptions will determine how rapidly the hypothetical network will reach full load, and then whether, as the result of changes in the market, migration to or away from the network should be modelled.

273. Our draft decisions on demand take-up and migration are:

273.1 instant take-up of demand on the hypothetical efficient operator's network;

273.2 a fully loaded network – 100% demand; and

273.3 constant demand during the regulatory period.

274. We consider that our assumptions of instant take-up with no migration are efficient because they result in a price that would cover for any piece-meal refurbishment, replacement, or expansion of the hypothetical efficient operator's network.

[160] TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, sections 2.5.1 and 2.5.3. By way of an alternative, we have considered framing non-Chorus UFB as either a competitor, or an area an efficient operator wouldn't deploy. The competitor angle would be consistent with HFC reasoning i.e. connection costs are included with active lines excluded from volume. Alternatively, an efficient operator wouldn't deploy/compete with subsidised fibre network (without regulated duct access) and therefore costs and volume within these regions are excluded i.e. no difference between cost base and volume base.

275. Attachment A provides a detailed discussion of how we have reached our draft decisions.

Determining the hypothetical network

276. Once we have determined the demand footprint for the UCLL service, we then must determine the efficient costs of supplying that demand. To do so we have first considered the MEA for the UCLL service to determine what we consider a hypothetical efficient operator would likely build today to provide the UCLL service. We have then considered how the hypothetical efficient operator would likely deploy that network, including the level of optimisation employed relative to Chorus' network.

Selecting the MEA for the UCLL service

277. In selecting our MEA for the UCLL service, we have considered the "core functionality" of the service that, in our view, the MEA technology must be capable of providing.

278. Our view is that the service we model must allow an access seeker to provide voice services and broadband services to end-users. That is, the service must allow end-users to send and receive traffic.

279. We have also given weight to other network features, such as point-to-point and the ability to unbundle at layer 1. While we have given weight to these features, we do not consider them to be determinative for our MEA selection. For instance, we have given less weight to the ability to unbundle in rural areas where we consider unbundling is less likely to happen.

280. Based on our view of "core functionality", we consider the following technologies eligible for consideration as the MEA for the UCLL service:

    280.1 copper/fibre-to-the-node (FTTN);

    280.2 fibre-to-the-home (FTTH) (both point-to-point and Gigabit Passive Optical Network (GPON));

    280.3 fixed wireless access (FWA);

    280.4 HFC; and

    280.5 mobile.

281. Based on advice from TERA, we then considered the following factors in considering which technology we would select as our MEA:

281.1 technological performance;

281.2 cost;

281.3 operator strategy; and

281.4 subscriber and retail price.[161]

282. Following consideration of submissions on our July 2014 regulatory framework and modelling approach paper, our draft decision is that we will model FTTH, and at the edges of the network we will model FWA.

283. We have given additional weight to technologies that provide a point-to-point connection and allow unbundling at layer 1 level. Consequently, for the FTTH network we prefer to model a point-to-point network rather than GPON.

284. While Vodafone and Spark generally supported inclusion of FWA, they argued that FWA coverage should not be restricted to the edge of the network. Vodafone submitted that we should not arbitrarily confine the "edge" to the current and projected RBI FWA footprint.[162] Spark made a similar submission.[163]

285. Our draft decision is that FWA will be confined to the current and projected RBI FWA footprint. While we have taken a conservative approach to the extent of FWA in the modelled network, our view is that expanding the FWA boundary outside the RBI FWA footprint may be inconsistent with our consideration of technical factors, such as the observed network roll-out in New Zealand. We consider that unbundling is likely to be more feasible in areas outside the RBI FWA footprint, and therefore we gave greater weight in these areas to technologies that can be unbundled.

286. Following consideration of submissions, we have also decided to model a FTTN/copper network alongside our FTTH with FWA network.

287. Although our MEA remains FTTH with FWA, our preliminary view, following consideration of submissions on our July 2014 regulatory framework and modelling approach paper, is that we would adjust the cost if the FTTN/copper network was less costly than the FTTH with FWA network, to reflect the different capabilities of the network.[164]

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161 TERA places less weight on this factor given the uncertainty surrounding consumer prices, preferences and choices.

162 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G2.1].

163 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [126].

164 See TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services – Model Reference Paper" November 2014, section 2.1.

288. Attachment B provides a detailed discussion of how we have reached our draft decisions.

Optimising the network we have modelled

289. We have made the following optimisation draft decisions in the model:

289.1 We have adopted a modified scorched node approach for the modelled network. This approach is an orthodox approach in TSLRIC modelling and is more reflective of an incremental roll-out. We consider that basing the regulated price on modelling an approach that is compatible with an incremental roll-out is more likely to promote efficient investment. Accordingly, TERA has modelled an "optimally structured network" which is constrained by the existing number of nodes (exchanges) and their existing locations, and follows the road network.

289.2 TERA has recommended minor modifications to the exchange boundaries as defined by Chorus, to take into account the location of notional exchanges and network connectivity constraints imposed by the adoption of a theoretical network that is based on the road network. We agree with TERA's recommended approach.

289.3 TERA has modelled the size of exchange buildings based on a bottom-up calculation of the required space and equipment. Chorus has also provided data regarding relevant modern sites consisting of blueprints of a number of sites and linking their current sites with the relevant modern buildings. Where available, TERA has used this information alongside its bottom-up calculation to model the most efficient deployment.

289.4 The model includes use of motorways as, in our view, an efficient operator would be likely to make use of motorways where it is efficient to do so. Our model has also made use of private roads on the basis that a hypothetical efficient operator would pay consent costs and obtain access to lay fibre on private land where efficient to do so.

290. At a practical level, the key component of our approach to optimisation is the routing of trenches and, therefore, cable length.

291. Attachment C provides a detailed discussion of how we have reached our draft decisions.

Deploying the hypothetical network

292. We are deploying a FTTH and FWA network. The FTTH network can be deployed aerially, underground or a combination of both. Modelling FWA, we need to choose what we consider to be the optimal deployment method, and also where we consider a hypothetical efficient operator would deploy FWA.

293. Network deployment may impact on both capex and opex. As a general point we consider that aerial deployment is likely to cost less than underground overall, but to require greater opex.

294. For the FWA coverage areas we have ensured that 100% of customers within each FWA coverage area can be connected to the network in the following way:

294.1 Capping the number of premises that can be served by a FWA tower at 67 per coverage area. This will ensure that each premise connected to the network by FWA is guaranteed 250kbps bandwidth.

294.2 Within each FWA coverage area, TERA has identified, through estimation, the most expensive premises to connect in that area.[165]

294.3 The most expensive 67 premises are served by the FWA infrastructure, with the remaining premises connected by point-to-point fibre to the nearest exchange.

295. We have considered modelling aerially only in areas where there is existing electricity distribution business (EDB) aerial infrastructure. Having considered the proportion of aerial deployment by network operators in New Zealand and their differing constraints, we consider it reasonable that a hypothetical efficient operator would target deployment of aerial network within that range. Accordingly, we have modelled 36% of distribution cables using aerial infrastructure.

296. Regarding the percentage of service lead-ins to model aerially, we note that Chorus has not been able to provide information on the number of premises served aerially.

297. Therefore, we have approximated the number of premises served by aerial lead-ins based on EDB data. To do so we have calculated a weighted average percentage of end-users served by aerial lead-ins across the EDB areas. Accordingly, we have modelled 49% of service lead-ins using aerial infrastructure.[166]

298. Attachment D provides a detailed discussion of how we have reached our draft decisions.

[165] TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Specification" November 2014, section 6.2.

[166] See Attachment D for a table setting out our calculation.

Determining the cost of the hypothetical network

299. Having decided how we will build the hypothetical network, we must decide how we will cost the elements that make up the network.

Asset valuation

300. Our draft decision is to use optimised replacement costs (ORC) to value all assets used in our model as:

300.1 we consider that adopting an alternative methodology would weaken the predictability of the regulatory framework. Such a move can have longer-term costs to end-users from its adverse impact on investment incentives; and

300.2 in our view, in practice, the alternative methodologies have limitations which may impact on their potential benefits. Most notably failure to recognise the opportunity costs of fully depreciated assets that are still in use.

301. Attachment E provides a detailed discussion of how we have reached our draft decisions.

Weighted average cost of capital

302. We have estimated a post-tax WACC of 6.47% for the UCLL service. A detailed discussion of how we estimated the WACC percentage is set out in the Cost of Capital for the UBA and UCLL pricing reviews paper, published alongside our draft determination.

Asymmetric risk

303. We have considered asymmetric risks in our model to include prudent and efficient costs over the long run for the hypothetical efficient operator; and to reduce the risk that we underestimate the forward-looking costs over the long run for the hypothetical efficient operator.

304. Accordingly, we reached the following draft decisions:

304.1 an ex ante allowance for specific prudent costs is appropriate for catastrophic risks, as is recognising the risks of asset stranding due to technological change by shortening asset lives; and

304.2 an ex ante allowance is not appropriate for risks of asset stranding due to competitive developments or for asset stranding due to re-optimisation.

305. Attachment F provides a detailed discussion of how we have reached these draft decisions.

Asset lives

306. We consider that the accounting asset lives provided by Chorus are an appropriate starting point. We have used these as a proxy for the economic lives of the assets in our model.

307. Where the asset lives provided by Chorus seemed out of line with what has been observed in other jurisdictions, or if no data was provided, TERA has used international benchmarks derived from TSLRIC models overseas.

308. In selecting this approach, we have weighted the risks of over-compensating with under-compensating Chorus.

309. Attachment G provides a detailed discussion of how we have reached our draft decisions.

Price trends

310. Asset price trends in our model have been used to forecast costs, and have been applied with the tilted annuity depreciation. We need price trends because we need to understand how the value of assets will change over time in order to construct our price path.

311. We have forecasted price trends as follows:

    311.1 for active assets we have used international benchmarks;

    311.2 for passive assets we have used a cost escalation approach using the consumer price index (CPI) as the default; and

    311.3 for labour related opex we have used a cost escalation approach using the labour cost index (LCI).

312. We have decided not to forecast price trends for non-labour related opex, and have treated it as nominally constant over the regulatory period. We expect that efficiencies are likely to offset general inflation.

313. We have converted foreign currency to New Zealand dollars using purchasing power parity (PPP) rates. We have used a constant rate for PPP over the regulatory period.

314. Attachment H provides a detailed discussion of how we have reached our draft decisions.

Depreciation

315. Many of the costs incurred in providing the UCLL service are on fixed infrastructure assets or capital goods that are useful over many years. A forward-looking cost-based price assumes that these costs are recovered over a number of years. Depreciation determines the amount of an asset that the network operator can recover each year through the regulated access price.

316. We have applied a titled annuity methodology which we have determined is the most appropriate for our TSLRIC modelling exercise. A tilted annuity will result in a relatively constant rate of change in prices in a situation where a stable demand profile is modelled. This is expected to avoid windfall gains and losses being caused by changing network costs.

317. Attachment I provides a detailed discussion of how we have reached our draft decisions.

Exclusion of certain capital costs

318. We have considered whether the hypothetical efficient operator would incur all of the capital costs of building the hypothetical UCLL network, or whether we should deduct some of the modelled capital costs for some parts of the network because the hypothetical efficient operator would not incur those costs itself. The hypothetical efficient operator could, as occurs in practice, require a payment to induce it to build part of the network (a "capital contribution") and/or require end-users to incur some of the costs, such as trenching and reinstatement costs.

319. As noted above, we have used the TSO network coverage as our starting point for where the hypothetical efficient operator would deploy its network. We then go on to consider whether or not the hypothetical efficient operator would connect premises in addition to the existing TSO coverage.

320. Our preliminary view is that premises beyond the TSO-derived boundary would only likely be connected where a capital contribution was provided by the end-user (with only opex being incurred by the hypothetical efficient operator) – as evidenced by the copper network's historical deployment.[167]

321. Accordingly, our approach is to exclude the capex of the network outside the TSO-derived boundary from the full network TSLRIC cost. We note that it is only the capital cost of the extension of plant outside the TSO-derived boundary that is deducted. The cost of capacity back to the node (within the TSO-derived boundary) and the operating cost of the plant outside the TSO footprint remain in the full network TSLRIC cost.

322. The effect, as determined based our defined boundary, is to exclude capex related to approximately 6.4% of all the address points in the TSLRIC model.

323. Attachment J provides a detailed discussion of our draft decision.

[167] We establish a TSO-derived boundary based on the area defined in the TSLRIC model used for TSO. Each segment within the road network model was tagged with a TSO value of 'True' if 50% or more of its spatial definition fell within one or more of the convex polygons we calculated based on (December 2001) data about the extent of Telecom's network, otherwise the segment's TSO value was set at false. The convex polygons were derived from the historic customer locations for each exchange area which were grouped into clusters

Tax

324. The TSLRIC-based price we derive for the UCLL service should be grossed up for corporate tax. Attachment K provides a detailed discussion of how we have adjusted the tilted annuity charges for each asset type to allow for tax and taking into account an appropriate tax depreciation rate.

Cost allocation

325. Once we complete costing the network, we must allocate the network costs to services. We are also required to include a reasonable allocation of forward-looking common costs.

326. Finally, we allocate the cost of the UCLL service across the number of connections to determine the annualised unit cost of the UCLL and SLU services (this step is set out in Chapter 3).

Approach to cost allocation

327. Our draft decision in respect of cost allocation is:

    327.1 for network costs, we have used a capacity-based approach rather than the Shapley-Shubik approach (because a capacity-based approach reflects cost drivers). The capacity-based approach is the most established approach in TSLRIC modelling, is more transparent than the Shapley-Shubik approach, and is supported by all submitters;[168] and

    327.2 for non-network costs, we have used an Equi-proportional mark-up (EPMU) approach, as this is the approach that is widely used in practice in TSLRIC modelling and is also supported by all submitters.

328. Attachment L provides a detailed discussion of how we have reached our draft decisions.

[168] In the absence of capacity-based data we have relied on TERA's expertise.

Detailed implementation

329. In the following section we summarise how TERA has approached modelling the access network, including where it has implemented the draft decisions we have made above. TERA's model reference and model specification papers, which have been published alongside this draft determination, provide further detail.

Architecture of the TSLRIC models

330. The TSLRIC model is made of four main files:

330.1 one Microsoft (MS) Access file used to dimension the passive network; and

330.2 three MS Excel files used to determine:

330.2.1 opex;

330.2.2 capex of the access network; and

330.2.3 cost of the core network and prices.[169]

Capex of the access network

331. TERA has followed a 3-part and 8-step approach (as illustrated in Figure 1 below):

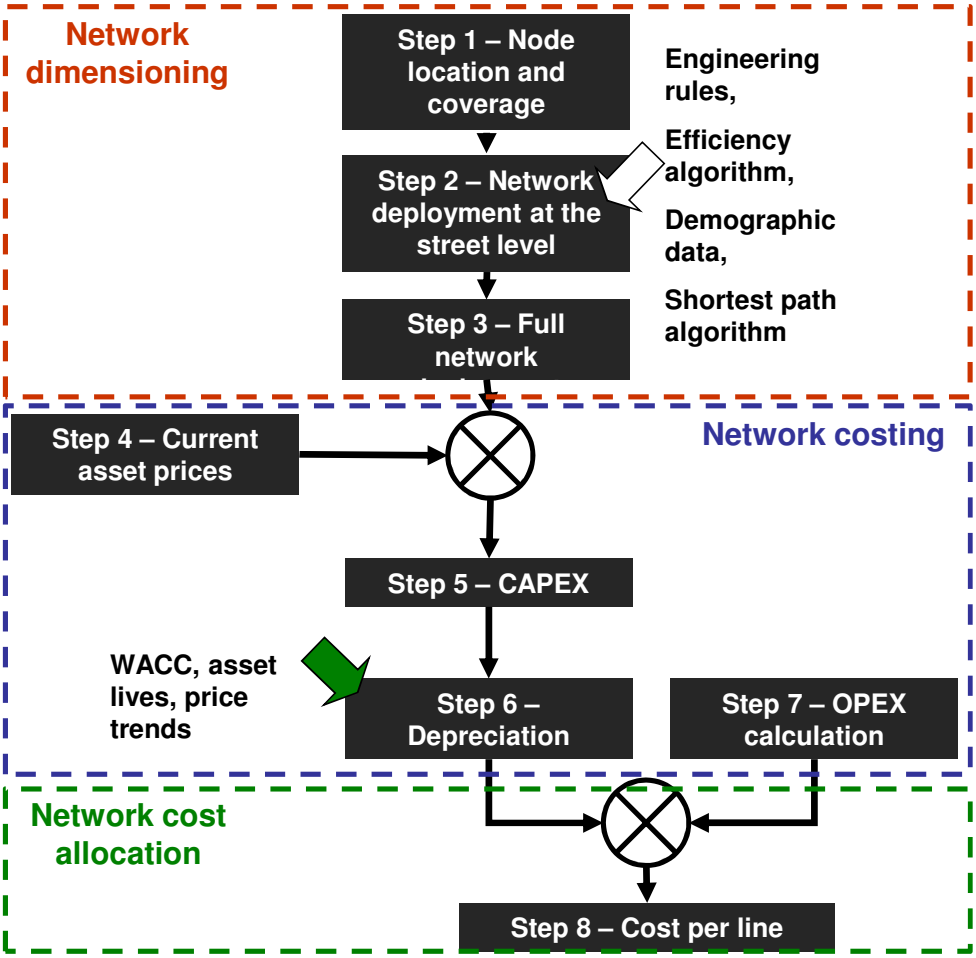
331.1 The network dimensioning phase derives the number of assets based on the total demand (Steps 1 to 3);

331.2 The network costing phase derives the yearly cost of the network based on the network dimensioning and on the unit costs (Steps 4-7); and

331.3 The network cost allocation phase derives the price of the different services (Step 8).

[169] We summarise TERA's implementation of the core network in the UBA draft determination paper.

Figure 1: Access network modelling approach



Source: TERA Consultants

Network dimensioning

332. As noted above, we have decided to adopt a modified scorched node. The model incorporates a modified scorched node approach as follows:

332.1 Existing nodes of the network and existing road network are the starting point of the modelling.

332.2 The fibre access network optical distribution frames (ODFs) are located at Chorus' main distribution frames (MDFs) and there are no cabinets.

332.3 TERA has made modifications to take into account:

332.3.1 notional exchanges; and

332.3.2 network connectivity constraints.

333. Having identified the MDF positions, TERA has split the country into MDF coverage areas.[170]

334. The model computes the cost efficient paths connecting each end-user to a MDF. This is based on a shortest path algorithm.

334.1 One set of paths is computed for the FTTH network, which is the shortest path from each building to its parent ODF.

334.2 Two sets of paths are computed for the FTTN network:

334.2.1 the shortest path from each building to its parent cabinet; and

334.2.2 the shortest path for each cabinet to its parent MDF.

335. Having determined all the shortest paths required, the model computes demand at a section level, which consists of a segment of road between two consecutive intersections.

336. The model then dimensions the access network at a section level, which consists of determining the number of assets required to meet the demand in that section. The full network is dimensioned by aggregating the number of assets required at each section level.

Network costing

337. Having determined the network inventory required to dimension the network, the model then calculates the cost of the network.

338. The first step in the network costing phase is to determine unit costs for the assets required to dimension the full access network. Our starting point is to use the data provided from Chorus through section 98 notices. TERA has compared the Chorus data against other countries.

338.1 TERA notes that the material cost of ducts and cables are generally uniform across jurisdictions. However, installation costs can vary.

338.2 Where Chorus has not provided unit costs, such as distribution points, street cabinets and MDF/ODFs, TERA has inferred the cost by benchmarking against other countries.

338.3 TERA notes that trenching costs, which is one of the main cost categories of a fixed network, is difficult to benchmark due to its country specific nature. TERA has determined the efficient unit cost for trenching based on the efficient costs provided by Beca.

339. As set out in Attachment D, for the FWA part of the access network, we have based spectrum costs on the recent auction of the 700MHz band.

[170] For the FTTN network, TERA splits MDF areas into street cabinet areas.

340. TERA has applied the unit costs it has determined to the inventory of assets determined the network dimensioning phase in order to calculate total capex for the access network.

341. Following this, the model calculates an annualised cost for the network by applying an asset specific depreciation formula to the network capex, which takes into account:

341.1 asset lives;

341.2 price trends;

341.3 tax depreciation rates;

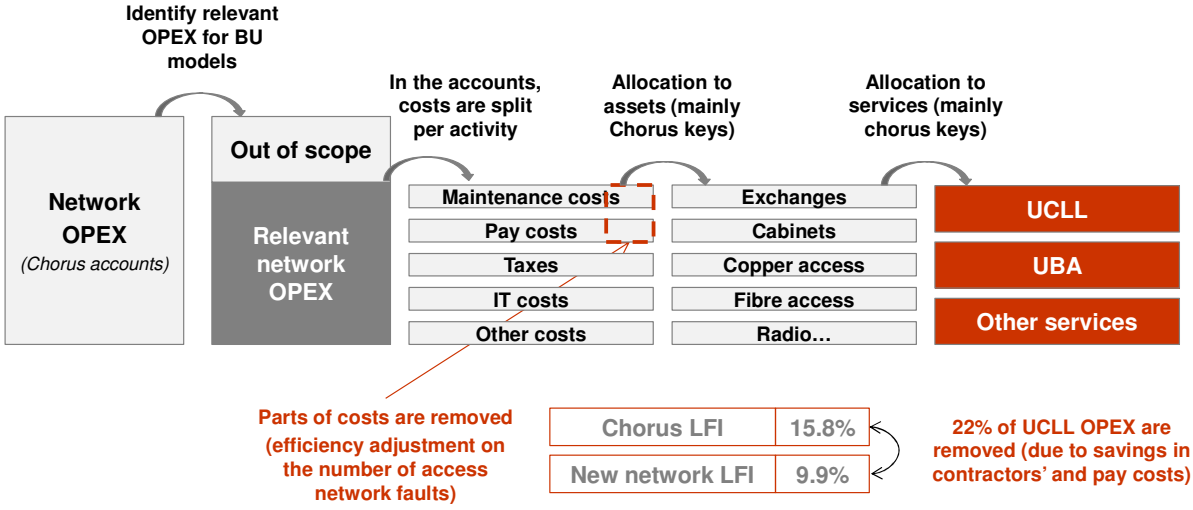
341.4 the corporate tax rate;

341.5 the post-tax WACC; and

341.6 the time to build the network is six months.[171]

342. TERA has also built a separate model to calculate the opex for the network. The network opex calculation includes the following steps:

Figure 2: Network opex calculation steps



343. Our starting point for the opex model is Chorus' accounts. TERA has applied an efficiency adjustment to reflect the likely lower fault rates of the hypothetical efficient operator's new network.

344. In order to forecast opex, the costs have been divided into two categories – labour related opex and non-labour related opex. TERA has calculated labour related opex based on the LCI. As explained above, we have treated non-labour related opex as constant in nominal terms.

171 Technically this reflects the time between the moment the investment is paid and the network starts generating revenues.

345. TERA has assumed that fibre opex to be equal to 50% of copper opex (based on National Regulatory Authorities (NRA) and manufacturer's studies). FWA opex includes spectrum fees and maintenance opex (based on information provided by Vodafone).

Network cost allocation

346. As set out above we have modelled a FTTN network alongside our FTTH with FWA MEA. Accordingly, before allocating network costs, TERA has compared the cost of the FTTH with FWA MEA network and the FTTN network and considered whether a cost adjustment is necessary. The MEA is adjusted based on costs to reflect that UCLL services are based on a copper network, and therefore do not have the same capabilities:

    346.1 If the FTTH with FWA network costs less than the copper network, then no adjustment is needed.

    346.2 If the FTTN network costs less than the FTTH with FWA network:

        346.2.1 The cost of the FTTH with FWA network is adjusted to reflect the cost of the copper network.

        346.2.2 This means the cost of the FTTN network is used to derive the prices of the UCLL and SLU services.

347. The comparison between the cost of the FTTN/copper network and the cost of the FTTH with FWA network has been carried out at a national level.

348. TERA has determined the lowest cost network scenario by comparing the annual cost (annualised capex + opex + non-network annual costs) of the FTTN/copper network with the annual cost of the FTTH with FWA network minus the annual cost of the SLUBH (as calculated in the FTTN network).

349. The FTTH with FWA network is the lowest cost, therefore, TERA has allocated costs based on the costs of this network.

350. For the access network, TERA note that assets may be shared with other network levels, such as FWA, the core network, and SLU backhaul. TERA have, therefore, allocated costs between the network levels.

351. For each asset, TERA has computed an allocation key consistent with the dimensioning driver for that asset, using a capacity-based approach:

351.1 the costs of trenches and manholes are allocated on the basis of the ducts in the trench;

351.2 the cost of ducts are allocated on the basis of the cable surface (by cross-sectional area), when copper, and on the basis of sub-duct surface, when fibre;

351.3 the costs of poles are allocated on the basis of the equipment carried by the poles, ie, the number of joints.

352. Having allocated costs, we have calculated the unit cost for the UCLL and SLU STD services, which we discuss in Chapter 3.

Chapter 3: Calculating the TSLRIC-based price for UCLL/SLU

Purpose

353. We are required to determine prices to update the UCLL and SLU STDs. In this chapter, we determine how we convert the total annualised TSLRIC costs we have modelled to monthly unit prices, and set the prices that we consider best give, or are likely to best give, effect to the section 18 purpose statement.

354. The purpose of this chapter is to set out:

    354.1 our approach to transforming the TSLRIC costs we have modelled for our hypothetical network into prices, in order to update the prices in the UCLL STD and SLU STD;

    354.2 the key transformations we have undertaken to convert total annualised TSLRIC costs to constant nominal monthly prices over the regulatory period; and

    354.3 the requirements of the Act, in respect of section 18 and relativity considerations.

Overview of our approach to converting TSLRIC costs to prices

355. This section provides an overview of our approach to converting total annualised TSLRIC costs to prices for the UCLL STD and SLU STD. Our draft decisions and reasons for each of our steps explained below are provided in detail in this chapter.

356. We begin with the total TSLRIC annualised costs figures after we have allocated common costs and shared costs between other services. That cost allocation is discussed in Attachment L.

357. Our TSLRIC model determines costs in urban and non-urban areas. However, as explained in Chapter 1, clause 4A of Schedule 1 of the Act requires us to determine prices that apply throughout the geographical extent of New Zealand. The single national price for each of UCLL and SLU only applies from 1 December 2014.[172] The approach outlined in this chapter is based on the single national price. The TSLRIC costs and conversion to prices for urban and non-urban areas are discussed in Attachment N.

[172] Amendment Act, s 73(3).

358. To convert the annualised TSLRIC costs to monthly unit costs we followed the following steps:

    358.1 We first estimated the annualised TSLRIC costs for the unbundled local loop (ULL) for each of the five years during the regulatory period, and estimated the same for sub-loop backhaul (SLU backhaul).[173]

    358.2 To arrive at average monthly TSLRIC costs for each of the five years, we then divided the annualised TSLRIC costs by 12, ie the number of months in a year.

    358.3 To calculate the monthly unit TSLRIC costs for each of the five years we divided the monthly costs by demand.

359. We then calculated the monthly unit TSLRIC costs for each of the UCLL and SLU services. Our draft decision, reasons for our draft decision and our approach for how to determine the cost for UCLL and SLU are discussed at paragraphs 372-402 below.

360. Our draft decision is to set a constant nominal monthly price over the regulatory period. To determine a constant nominal price, we levelise the national geographically averaged monthly unit TSLRIC costs determined for UCLL and SLU for each of the five years over the regulatory period.

361. We then considered whether the TSLRIC cost estimate determined for UCLL and SLU best gives, or is likely to best give, effect to the section 18 purpose statement and the relativity requirement of the Act.

    361.1 We consider that we should give weight to erring on the side of setting a price that is too high, to avoid the negative welfare consequences of setting a price that is too low. Nonetheless, we agree with the analysis of Professor Vogelsang, that the outcome of our modelling decisions is enough to avoid these consequences of underestimating the price. Our draft decision is therefore that the unadjusted central estimate of the TSLRIC price produced by our model (and the calculations described above) is likely to best give effect to the section 18 purpose statement.

    361.2 We consider that the relativity requirement of the Act has less relevance in setting the UCLL and SLU prices, because the primary method through which regulated prices can affect unbundling is the UBA increment. Relativity in respect of uniform incentives for unbundling across cabinetised and non-cabinetised lines is reflected in our approach to determining the SLU price such that the regulated price is the same across cabinetised and non-cabinetised lines.

[173] We determine the annualised costs for SLU backhaul to allow us to allocate the cost of ULL between SLU and UCLL. This draft decision, reasons for our draft decision and approach is discussed at paragraphs [372]-[402] in this chapter.

362. Our draft decision for UCLL and SLU prices is summarised in Table 1 below.

Table 1: Constant nominal monthly prices for SLU and UCLL, 2015-2019 [NZ$]

	National (geographically averaged)
UCLL	28.22
SLU	14.45

Source: Commission's TSLRIC model for draft decision

Total annualised TSLRIC costs for ULL and SLU backhaul

363. Table 2 below shows the total TSLRIC costs based on our TSLRIC model for each of the years during the regulatory period. These figures are after we have allocated common costs and shared costs between other services, as discussed in Attachment L.

Table 2: Total annualised TSLRIC costs based on our TSLRIC model for ULL and SLU backhaul, 2015-2019 [NZ$, billions, nominal]

	2015	2016	2017	2018	2019
Total TSLRIC costs for ULL	459.76	469.85	480.21	490.86	501.81
Total TSLRIC costs for SLU backhaul	111.55	114.01	116.54	119.14	121.81

Source: Commission's TSLRIC model for draft decision

Converting total annualised TSLRIC costs to monthly unit TSLRIC costs

364. In this section we explain how we convert the total annualised TSLRIC costs for the unbundled local loop to monthly unit TSLRIC costs for each of the five years of the regulatory period.

365. We also convert the total annualised TSLRIC costs for SLU backhaul to monthly unit TSLRIC costs, because, as we explain further below, we require monthly SLU backhaul costs to allocate the cost of the ULL to UCLL and to SLU (we set out our approach to this cost allocation between UCLL and SLU in the subsequent sections of this chapter).

366. The total annualised TSLRIC costs for ULL are shown in Table 2 above.

367. To calculate the monthly TSLRIC costs for each of the five years, we divided the annualised TSLRIC costs by 12, ie the number of months in a year.

368. Table 3 below presents the monthly TSLRIC costs for each of the five years during the regulatory period.

Table 3: Monthly TSLRIC costs, 2015-2019 [NZ$, millions, nominal costs]

	2015	2016	2017	2018	2019
ULL	38.31	39.15	40.02	40.91	41.82

Source: Commission's TSLRIC model for draft decision

369. To calculate the monthly unit TSLRIC costs for each of the five years, we divided the monthly TSLRIC costs by the ULL demand profile in our TSLRIC model. Attachment A sets out our draft decisions relating to the demand profile for ULL used in our TSLRIC model.

370. Table 4 below presents the monthly unit TSLRIC costs for each of the five years during the regulatory period.

Table 4: Monthly unit TSLRIC costs for ULL, 2015-2019 [NZ$, nominal costs]

	2015	2016	2017	2018	2019
ULL	21.79	22.27	22.76	23.27	23.78

Source: Commission's TSLRIC model for draft decision

371. We followed the same approach to convert the total annualised cost for SLU backhaul to monthly unit costs. Where we divide by demand,[174] we use the number of UBA connections at an active cabinet. Table 5 below presents the monthly unit TSLRIC costs for SLU backhaul, for each of the five years during the regulatory period.

Table 5: Monthly unit TSLRIC costs for SLU backhaul, 2015-2019 [NZ$, nominal costs]

	2015	2016	2017	2018	2019
SLU backhaul	13.21	13.50	13.80	14.11	14.43

Source: Commission's TSLRIC model for draft decision

Allocating ULL costs to UCLL and SLU services

372. Having modelled the TSLRIC costs for the unbundled local loop, we need to ensure that they are mapped to prices to be included in the UCLL and SLU STDs.

[174] We use the term "demand" in respect of SLU backhaul loosely – it is not intended to imply the final demand for the SLU backhaul service, but rather refers more generally to the relevant measure of output over which the costs of SLU backhaul lines are recovered.

373. This section sets out our draft reasons for and approach to mapping costs to the UCLL and SLU services. In practical terms, this means allocating the TSLRIC monthly unit costs for the unbundled local loop network to these services, in order to determine the prices to update the UCLL and SLU STDs.

We need to allocate the monthly unit TSLRIC cost of the unbundled local loop to determine prices for UCLL and SLU

374. Our TSLRIC model determines the total cost of the unbundled local loop. It does not determine separate costs of UCLL and of SLU. That is because we have modelled a network that uses FTTH, with some FWA, which does not include active cabinets. In our July 2014 regulatory framework and modelling approach paper we explained why we consider we are not required to model a MEA or hypothetical network that provides separate costs for SLU.[175] We have modelled a network that a hypothetical efficient operator would build today, which is a fibre network that, unlike copper, does not require active cabinets to deliver broadband services.

375. Chorus has submitted that modelling a hypothetical network with no cabinets makes it difficult to model cost-based prices for the SLU service.[176] Chorus endorsed an alternative approach proposed by WIK where the relative costs of UCLL and SLU are determined by reference to an FTTN model, which we discuss below.

376. Spark agreed with our view in the July 2014 regulatory framework and modelling approach paper that we should model the full local loop network, and should not be constrained by the need to set separate UCLL and SLU prices.[177]

377. We must update each of the UCLL and SLU STDs with prices. The UCLL STD relates to the unbundled copper local loop between the end-user and the exchange.[178] The SLU STD relates to the unbundled copper local loop between the end-user and the active cabinet.[179]

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175 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014) paragraphs [198]-[203].

176 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [40.2].

177 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [15].

178 Commerce Commission "Standard Terms Determination for the designated service Telecom's unbundled copper local loop network" (7 November 2007), Decision 609.

179 Commerce Commission "Standard Terms Determination for the designated services of Telecom's unbundled copper local loop network service (Sub-loop UCLL), Telecom's unbundled copper local loop network colocation service (Sub-loop Co-location) and Telecom's unbundled copper local loop network backhaul service (Sub-loop Backhaul)" (18 June 2009), Decision 672.

378. By way of background, the separate STDs for UCLL and for SLU (and other sub-loop services) reflect the development of STDs under the Act over time. When we first determined the STD for UCLL, in November 2007, we decided not to include copper local loops from active cabinets because the cabinetisation to facilitate ADSL2+ that Telecom had agreed with the government to undertake was just getting underway.[180] We subsequently determined a STD for SLU (and other sub-loop services), and set the price for SLU based on a benchmarked proportion of 60.4% of the full-UCLL price.[181] When we re-determined the UCLL and SLU prices in December 2012 (i.e. the IPP prices that are now subject to this pricing review determination process), we also applied the 60.4% proportion of sub-loop to full-loop prices to determine the SLU price.[182] We must now determine the UCLL and SLU prices in accordance with the FPP.

379. Although our FTTH with FWA model determines the total cost of the ULL we must determine separate UCLL and SLU prices. Because our FTTH/FWA model does not include active cabinets, our model cannot distinguish between UCLL and SLU costs. This means we must find a way of deriving UCLL and SLU prices (to be included in the separate STDs) from our modelled cost of ULL.

380. However, as Table 5 above records, we have modelled a price for SLU backhaul (as part of the UBA FPP process). As we explain below, we remain of the view that the most appropriate way to derive the SLU price – consistent with our preferred aggregation approach – is to use the SLU backhaul price as an input.

Our preference in the July consultation paper was to aggregate

381. In our July 2014 regulatory framework and modelling approach paper we expressed our preference to set the same price for access between the end-user and the exchange, irrespective of whether the line is cabinetised or non-cabinetised.[183] We referred to this approach as aggregation. This is the principle that the price for UCLL = the price for SLU + the modelled TSLRIC price for SLU backhaul. We explain below why we have proposed to use the modelled TSLRIC price for SLU backhaul as a means of deriving the SLU price.

382. This also means that the price for UCLF = the price for UCLL = (the price for SLU + the modelled TSLRIC price for SLU backhaul).[184]

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180 Commerce Commission "Standard Terms Determination for the designated service Telecom's unbundled copper local loop network" (Decision 609, 7 November 2007), paragraph [53].

181 Commerce Commission "Standard Terms Determination for the designated services of Telecom's unbundled copper local loop network service (Sub-loop UCLL), Telecom's unbundled copper local loop network colocation service (Sub-loop Co-location) and Telecom's unbundled copper local loop network backhaul service (Sub-loop Backhaul)" (Decision 672, 18 June 2009), paragraphs [144]-[145].

182 Commerce Commission "Final determination on the benchmarking review for the unbundled copper local loop service" (Decision No. NZCC 37, 3 December 2012), paragraph [357].

183 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraphs [205] and [218].

184 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [224.6].

383. Our reasons for preferring an aggregated approach to map costs to services were:[185]

> Competitive neutrality between layer 1 and layer 2 is important to ensure that unbundling is incentivised where it is efficient to do so, and not incentivised where it would be inefficient to do so.
>
> An aggregated approach is more likely to promote the long-term benefit of end-users. We believe that a disaggregated approach raises the danger that the higher priced service may act as a cost floor to retail pricing where access seekers are constrained in differentiating their retail prices.[186]
>
> TSLRIC-based prices, based on an aggregated approach, may not fully reflect forward-looking costs. However, we note that mandatory geographic averaging of UBA already dislocates costs and prices by area of New Zealand, meaning that cost reflective prices by cabinetised and non-cabinetised lines may not achieve efficiency benefits.

384. In practical terms, this meant that:

384.1 In our July 2014 regulatory framework and modelling approach paper we were proposing that the UBA price would be the same for both cabinetised and non-cabinetised lines.

384.2 Giving best effect to the relativity requirement in the Act implies giving potential unbundlers uniform incentives for unbundling, as regards the differing backhaul requirements of cabinetised versus uncabinetised lines.

385. In response to our July 2014 regulatory framework and modelling approach paper, most submissions supported our preference of aggregation.[187] WIK on behalf of Spark and Vodafone, in particular, indicated that aggregation is common international practice.[188]

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185 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [206].

186 A disaggregated approach means that we set different prices for between the end-user and the exchange for cabinetised lines and non-cabinetised lines.

187 See, for example Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G3.1(a)]; and Telecom New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph 133; and Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraph [140].

188 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [50].

386. Chorus, to the contrary, supported disaggregation. Chorus submitted that SLU and UCLL costs are expected to be similar,[189] and UCLFS costs higher because these include the cost of the copper feeder.[190] Spark disagreed that a disaggregated approach will result in a higher UCLFS price, noting that the UCLFS service "consumes a small proportion of cable capacity and alternative low cost access technologies".[191]

387. We reject Chorus' view that the UCLFS price should be higher than the UCLL price:

387.1 As explained in Chapter 1, we consider the UCLFS price should be the UCLL price; and

387.2 A copper feeder is not included in the MEA of fibre and FWA that we have used to model forward-looking TSLRIC costs. We consider that it would be inefficient to have copper to the exchange. We also note that Chorus is not under an obligation to maintain the copper between the cabinet and exchange. In addition, our TSLRIC prices are not required to model all of Chorus' actual costs that it faces on its copper network. (Chorus recovers some costs through the commercial SLES service).

Our draft decision is to adopt an aggregated approach to set prices for UCLL and SLU

388. Our draft decision is to aggregate. We remain of the view that aggregation is likely to best give effect to the section 18 purpose statement of promoting competition for the long-term benefit of end-users and to best give effect to the requirement that we consider the relativity between UBA and UCLL prices, for the following reasons:

388.1 Separate prices leads to a price difference between cabinetised and non-cabinetised lines. Such a difference is unlikely to provide uniform incentives for unbundling (unless the UBA price is also differentiated between cabinetised and non-cabinetised lines).[192] Accordingly, aggregation gives best effect to the relativity requirement in the Act by ensuring that unbundlers are faced with the relevant unbundling costs in both the cabinetised and non-cabinetised settings, rather than prices being distorted by different access prices.

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189 Chorus states that "in 2012 the average trench length per customer for SLU was *longer* than the average trench length per customer for UCLL. Our expectation is that this difference is likely to be balanced out by relative unit costs of trenching in different geographical areas, so that the costs for the two services are likely to be approximately equal", Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [149], emphasis in original.

190 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraphs [20] and [149].

191 Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraph [141].

192 The UBA price on cabinetised lines would reflect sub-loop backhaul costs where as those costs would be excluded from non-cabinetised lines.

388.2 Separate UBA prices raise the danger that the higher priced service may act as a cost floor to retail pricing where, as appears to often be the case, access seekers are constrained in differentiating their retail prices i.e. between cabinetised versus non-cabinetised lines.

388.3 As indicated by WIK, aggregation is common international practice and is therefore consistent with our objective to give greater weight to taking a predictable approach to implementing TSLRIC.[193]

Our draft decision is a weighting approach so that price of UCLL = price of SLU + modelled TSLRIC price of SLU backhaul

389. Having decided to aggregate, it is then necessary for us to determine how we translate the costs derived for the full local loop into a price for the UCLL and SLU services.

390. Our July 2014 regulatory framework and modelling approach paper proposed one approach to mapping costs to services and invited submissions on our proposal and alternative approaches.[194]

391. At this stage we have identified two options available to us to map the costs to services:

391.1 Our proposal in the July 2014 regulatory framework and modelling approach paper to use the modelled TSLRIC SLU backhaul price as an input and use a weighting approach to ensure that UCLL is equal to SLU plus SLU backhaul; and

391.2 An alternative approach proposed in submissions (particularly by WIK), of calculating the SLU price based on the ratios in a FTTN model for UCLL and SLU.

193 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [50].

194 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [222].

392. Our July 2014 regulatory framework and modelling approach paper explained the first approach as follows:[195]

> Determine the average cost of all local loop lines.
>
> Determine an efficient price for SLU Backhaul.
>
> Share the cost of the local loop between SLU and UCLL until the SLU cost equates to the UCLL cost less the SLU Backhaul cost.
>
> This example ensures that costs are mapped to services so that the UCLL cost is equal to the cost for SLU and SLU Backhaul.
>
> Maintaining an averaged UBA cost, and allowing UCLL to be equal to SLU plus SLU Backhaul, potentially neither incentivises nor disincentivises unbundling on average.
>
> We assume that in an optimal network, the UCLFS customer would pay SLU plus SLU Backhaul to get voice traffic back to the exchange. Therefore, the UCLFS price would be the same as the UCLL and SLU plus SLU Backhaul price.

393. WIK argued that our proposal does not take into account that the result of a FTTH MEA model is the cost of a fibre network and the cost is significantly lower than those for a copper network, which could result in a SLU cost of almost zero. For this reason, WIK proposed an alternative approach, namely, to transfer the relative cost difference between SLU and UCLL for a FTTN model to a FTTH model.[196]

394. Chorus, in its submission to our July 2014 regulatory framework and modelling approach paper, first indicated that our proposal disconnects TSLRIC from each service and this is inconsistent with the Act.[197] However, in its cross-submission, Chorus supported WIK's approach to determine the SLU price based on the cost ratios of SLU and UCLL in a FTTN model.[198]

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195 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [224].

196 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [49].

197 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraphs [20] and [147].

198 Chorus "Cross-submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 20 August 2014, paragraph [142].

395. Spark also raised the concern that our proposed approach allocates an equal share of SLU backhaul to the UCLFS service. It considered that if we were to adopt a different approach, it would need to consider how the shared backhaul is to be allocated. In this respect, Spark noted that an equal allocation may not be relevant as, for example, the UCLFS service uses only a small proportion of the available access network frequencies/bandwidth.[199]

396. In our view this is not the case. We are not including SLU backhaul costs in UCLL or UCLFS costs. We are simply using the modelled TSLRIC SLU backhaul costs to establish the relationship between the SLU and UCLL costs, which are derived from the cost of the ULL.

397. As we explain above, we have been required to calculate the efficient TSLRIC price of SLU backhaul for the purpose of the UBA FPP. Given the requirement to calculate the SLU price (despite the absence in our FTTH MEA of active cabinets) and given that we have decided an aggregation approach best implements section 18 of the Act, we propose to use the efficient TSLRIC price of SLU backhaul as an input to the calculation of the SLU price.

398. We have concluded that we will not use WIK's proposed approach, for the following reasons:

    398.1 WIK's proposed approach is unlikely to provide the same price for cabinetised and non-cabinetised lines. So, the outcome will be disaggregation, which is unlikely to provide uniform incentives for unbundling between cabinetised and non-cabinetised lines. This is unlikely to promote competition to the long-term benefit of end-users because disaggregation raises the danger that the higher priced service may act as a cost floor to retail pricing where access seekers are constrained in differentiating their retail prices.

    398.2 We are not using a FTTN MEA, so our model has limitations in respect of the practical implement of WIK's proposed approach.

[199] Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraph [141].

399. We recognise that SLU backhaul is a regulated service that is available, but has had little take-up. We note that we are not determining a regulated price for SLU backhaul. We use the SLU backhaul price revealed by the TSLRIC model for the purposes of our aggregation approach only, without prejudice to the current price applicable under the SLU Backhaul STD. We could re-determine the separate regulated price for SLU backhaul if requested under a section 30R review, in which case we would be required to examine the price again without being constrained by the price determined in the current processes. However, we note that submissions, in response to our July Regulatory Framework and Modelling Approach paper did not indicate a strong preference for us to conduct a s30R review.[200] In the meantime, the SLU backhaul price set in the STD remains in effect to the (limited) extent that RSPs purchase that service.

400. On balance, our draft decision is to use the weighting approach. This is the approach currently proposed during the FPP process that would result in the same price for cabinetised and non-cabinetised lines which, for the reasons laid out above, we consider is likely to best give effect to the section 18 purpose statement.

401. The formulae used to implement our aggregation approach are set out in Attachment N.

Our monthly TSLRIC unit costs determined for UCLL and SLU

402. Table 6 below shows the monthly TSLRIC unit costs determined for UCLL and SLU based on our aggregation approach as explained in the previous sections.

Table 6: Monthly unit TSLRIC costs, 2015-2019 [NZ$, millions, nominal costs]

	2015	2016	2017	2018	2019
UCLL	27.08	27.67	28.28	28.91	29.56
SLU	13.87	14.17	14.48	14.80	15.13

Source: Commission's TSLRIC model for draft decision

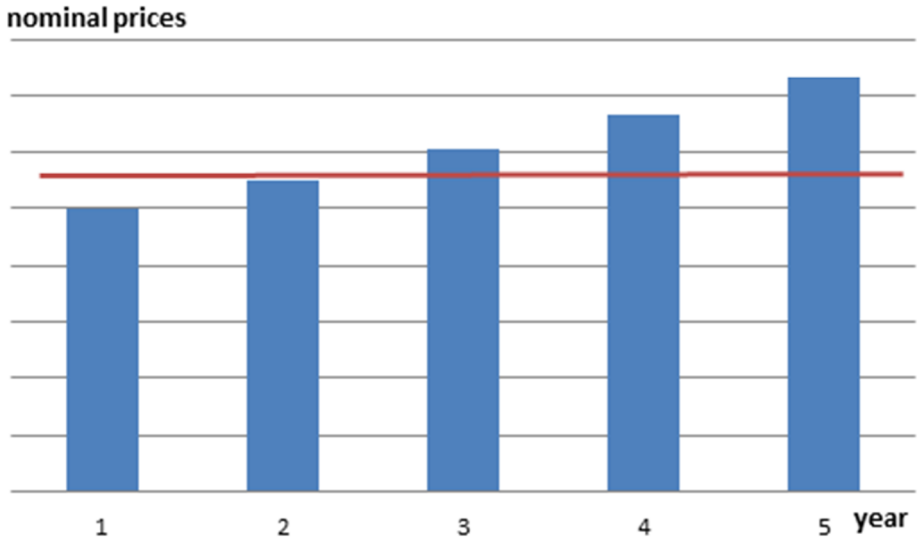
200 For example, Chorus submitted that there was only a small amount of cabinetised unbundling, given RSPs' commitment to fibre transition, and so we "should be slow to open new pricing processes" see Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [21]; Spark submitted that "it would be desirable to review the SLU Backhaul STD to ensure prices are aligned with cost, it's unclear whether this is necessary to implement the proposed approach. Under the proposed aggregated approach, the UCLL price will equal SLU plus efficient SLU backhaul costs. Therefore, the UCLFS price can be established as equal to UCLL or equal to SLU plus efficient backhaul costs even before such a s30R review is undertaken", Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [136].

Price profile

403. Our July 2014 regulatory framework and modelling approach paper set out our preference to set a constant TSLRIC-based price in nominal terms over the regulatory period.[201]

404. The implication is that we need to determine the nominal price for each year in the regulatory period, and then levelise the prices over the regulatory period. This is illustrated in Figure 3 below. The nominal prices for a service are represented by the blue bars, and the red line represents the levelised prices. The effect of this approach is that prices are higher in the earlier years of the regulatory period, and lower in the later years, relative to an approach where prices are not levelised.

Figure 3: Illustration of price profile decision



405. Chorus agreed with our preliminary view to set a constant nominal price over the regulatory period. Chorus submitted that this is a pragmatic proposal that will provide stability over the regulatory period. Chorus submitted that it assumes that we will set a flat nominal price such that over the regulatory period it has the same net present value (NPV) as a tax-adjusted tilted annuity over the same regulatory period. [202] We note that this was our proposed approach in our July 2014 regulatory framework and modelling approach paper.[203]

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201 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraphs [259] and [260].

202 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [145].

203 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [259].

406. WIK on behalf of Spark and Vodafone argued that, when a tilted annuity approach is applied, the amounts of depreciation change (from period to period) in step with the expected changes in the prices of the network elements. It follows that the prices based on these cost components will also have to change from one period to the next.[204]

407. Vodafone submitted that we should allow TSLRIC price profiles for UCLL to vary across time periods. The reason was that depreciation varies from period to period based on expected changes in the prices of the network elements. Accordingly, it follows that prices based on the related cost components will therefore vary across time periods.[205]

408. We agree with both WIK's view and Vodafone's view that the nominal prices will change from one year to the next. This is illustrated in Figure 3 above by the bars. Our preference is, however, to levelise the calculated nominal prices over the regulated period. This results in a constant nominal price, illustrated by the red line in Figure 3 above. This can be implemented to ensure NPV neutrality, in the sense that the NPV of the cash flows arising from the levelised prices over the regulatory period is the same as the NPV of the cash flows arising from the modelled nominal (tax-adjusted tilted annuity) prices over this period.

409. Network Strategies queried whether our model is in nominal or real terms. Network Strategies submitted that we need consistency in our modelling approach. For example, Network Strategies notes that if we use nominal costs in our model, we should use a nominal WACC. [206] We can confirm that our model is in nominal terms and we are using a nominal WACC.

410. In response to submissions, our draft decision is to set a constant nominal price for the regulatory period, because doing so provides price stability over the regulatory period.

411. To determine a constant nominal price, we levelise the price over the period based on the monthly unit costs determined for each of the five years.

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204 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [73].

205 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G10.1].

206 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p. 54.

412. Our formula to determine the levelised prices for UCLL/SLU for each of the five years is:

$$Price = \frac{\sum_{i=1}^{5} \frac{Price_i}{\left(1 + WACC_{posttax}\right)^i}}{\sum_{i=1}^{5} \frac{1}{\left(1 + WACC_{posttax}\right)^i}}$$

Where
- **Price** is the levelised price
- **Price$_i$** is the monthly TSLRIC unit cost determined for each of the years
- **WACC$_{posttax}$** is the post-tax WACC used as an input to the TSLRIC model, applied as the discount rate
- **i** is the year of the determined price, i.e. year1=1, year2=2….year5=5

412.1 This formula allows for the same time cost recovery and stable prices over the regulatory period.

412.2 The effect of this formula is that we set a constant nominal price over the regulatory period such that the stream of cash flows arising from this price has the same NPV as the stream of cash flows arising from the nominal prices (the latter being a tax-adjusted tilted annuity) over the regulatory period.

412.3 We consider that, for the hypothetical efficient operator, this NPV neutrality requires that the post-tax WACC is applied.

413. Table 7 below presents the constant nominal prices for UCLL and SLU.

Table 7: Constant nominal monthly prices for SLU and UCLL, 2015-2019 [NZ$]

	National (geographically averaged)
UCLL	28.22
SLU	14.45

Source: Commission's TSLRIC model for draft decision

Consideration whether our TSLRIC estimate best gives, or is likely to best give, effect to the section 18 purpose statement

Our draft decision

414. In the UBA IPP determination, we decided it was appropriate under section 18 to choose a price point above the median to account for asymmetric costs:[207]

> Our view remains that the negative impacts on competition of under-estimating the forward-looking costs are greater than over-estimating the forward-looking costs. This implies that we should err on the higher side to avoid the negative consequences of setting a price that is too low.

415. In particular we noted that underestimating the price would adversely impact on returns to investment in new and innovative services and these costs were likely to be greater than the likely costs of over-estimating the price. We noted:[208]

> The Commission considers that accelerated migration implies a welfare cost to end-users because they could have continued to consume the cheaper copper broadband services rather than the more expensive fibre broadband services. However, as discussed above, this cost needs to be weighed against the benefits of accelerated migration in bringing forward services dependant on UFB take-up. Thus over time we would expect the value of the additional capabilities of fibre to grow and benefits to end-users to accrue, offsetting the welfare costs of accelerated migration.

416. Within the UBA IPP we referred to this concept interchangeably as both "asymmetric risk"[209] and "asymmetric cost".[210] In order to differentiate this concept from the asymmetric risks associated with asset stranding, throughout this draft determination we refer only to asymmetric costs in regards to this concept. To be clear, we use the term "asymmetric costs" to refer to the asymmetry of impact arising from the costs incurred when over-estimating versus underestimating the regulated price. The term "asymmetric risk" is used in respect of asset stranding to refer to risks that truncate a firm's distribution of returns at the one extreme, without an offsetting truncation at the other end.

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207 Commerce Commission "Unbundled Bitstream Access Service Price Review, Decision [2013] Final determination to amend the price payable for the regulated service Chorus' unbundled bitstream access made under s 30R of the Telecommunications Act 2001" (5 November 2013), NZCC 20, paragraph [221].

208 Commerce Commission "Unbundled Bitstream Access Service Price Review - Update on matters relevant to the UBA price review" (13 August 2013), paragraph [141].

209 See, for example, Commerce Commission "Unbundled Bitstream Access Service Price Review, Decision [2013] Final determination to amend the price payable for the regulated service Chorus' unbundled bitstream access made under s 30R of the Telecommunications Act 2001" (5 November 2013), NZCC 20, paragraph [231].

210 See, for example, Commerce Commission "Unbundled Bitstream Access Service Price Review, Decision [2013] Final determination to amend the price payable for the regulated service Chorus' unbundled bitstream access made under s 30R of the Telecommunications Act 2001" (5 November 2013), NZCC 20, paragraph [10].

417. We received expert advice from Ingo Vogelsang on the effects of the UCLL price on competition for the long-term benefit of end-users.[211] Professor Vogelsang noted that there may be positive network externality effects from higher UCLL (and therefore total UCLL plus UBA) prices:[212]

> Innovation benefits will come from the financial benefits for other networks and for content providers serving these networks. Additional externalities will accrue to the pre-existing subscribers of these services, who benefit from the additional or cheaper content made available to them.

418. We note that in considering the section 18 purpose statement, we are considering whether an adjustment to our central TSLRIC estimate is required to promote competition for the long-term benefit of end-users. Therefore we must consider not only whether a section 18 adjustment promotes competition, but also whether it does so for the long-term benefit of end-users. Accordingly, the long-term impacts on end-users' welfare are relevant to this analysis.

419. Our draft decision is that this asymmetric cost we were concerned with in setting the UBA IPP remains in respect of the UCLL FPP. In particular, the costs of mistakenly setting a price that is too high would include the welfare loss to end-users from higher retail prices for copper-based services. However, a price that is too low could slow migration to fibre-based services, with consequential impacts on the welfare benefits arising from migration to fibre networks. On balance, we continue to hold the view that, in principle, we should give weight to erring on the high side to avoid the negative consequences of setting a price that is too low.

420. We note the expert advice received from Ingo Vogelsang that our modelling decisions imply that a uplift is not required:[213]

> If the Commission sticks to its preliminary decisions to stay with the classical TSLRIC approach and therefore not to consider re-use of civil works and not to make a performance adjustment for the FTTH MEA, then as compared to application of the modified TSLRiC [sic] methodology being advocated by the EU the NZCC classical application results in a higher price. This would likely offset any efficiency argument (Alfred Kahn), investment risk or lumpiness that would go against the classical TSLRIC. It would also take care of any net positive externalities from incentivizing migration to UFB. Thus, there would, in my view, be no case to be made for an uplift to the WACC or for a generous approach to any other cost components

421. As explained elsewhere in this draft determination, in respect of our draft decision to not apply a performance adjustment when modelling a FTTH MEA and to not apply an alternative asset valuation to ORC for reusable assets, the basis of our draft decisions was not specifically to err on the high side.

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211 Ingo Vogelsang, "The effects of the UCLL contribution to the UBA aggregate on competition for the long-term benefit of end-users in New Zealand telecommunications markets", 2 July 2014.

212 Ingo Vogelsang "The effects of the UCLL contribution to the UBA aggregate on competition for the long-term benefit of end-users in New Zealand telecommunications markets" 2 July 2014, paragraph [29].

213 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 25 November 2014, paragraph [118].

422. Nonetheless, we recognise that Professor Vogelsang has assessed that the outcome of our decisions is, in his view, sufficient response to the asymmetry in the cost of under- or over-estimating the price.[214] We agree with his conclusions. Our draft decision is not to apply an uplift. We consider that the unadjusted central estimate of the TSLRIC price produced by our model is likely to best give effect to the section 18 purpose statement.

423. This draft decision is different to the approach we took in our most recent section 30R reviews of the UCLL and UBA IPP prices,[215] where an uplift was applied to the UBA IPP price only. Our approach in the UCLL and UBA IPP determinations reflected our evolving thinking regarding asymmetric costs after the 2011 amendments to the Act: the UBA IPP determination implementing the new cost-based pricing principle was completed almost a year after the UCLL IPP determination, and took account of further submissions and expert advice on this point.

424. We consider that the approach we are taking in the FPP draft decisions regarding where any uplift would be most effective is preferable.

425. Our FPP TSLRIC modelling provides us with a central estimate of the 'true' TSLRIC cost for the UCLL and SLU services, from which we can determine a range with an upper and lower bound. Although the model is conceptually capable of expressing a range, we have not done so in our draft pricing review determination, as we consider that that central estimate is appropriate for section 18 reasons.

426. As outlined above, we do not consider a section 18 uplift is appropriate in the current circumstances given the cumulative impact of a number of our TSLRIC modelling decisions have provided a central estimate which naturally mitigates asymmetric cost concerns. We consider that this qualitative assessment is open to us under section 18.

427. If however we are persuaded by submissions that a section 18 uplift would be appropriate, we consider that it would be open to us to move above the central estimate within the upper bound.

428. We would welcome submissions on the net effect of our decisions and how this may impact on any asymmetric cost considerations relevant to s.18.

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[214] We also note that our estimated TSLRIC price for UCLL and UBA is, in combination, greater than the current entry level wholesale price for UFB. Where we are concerned about the potential welfare costs of lower migration to alternative networks, most notably the UFB, we would expect the level of those welfare costs to relate to the relative price of UCLL (and UBA) and the UFB price. In the situation that the price of an existing service is already higher than the alternative (higher quality) service, the extent of potential welfare losses associated with a lower level of migration is expected to diminish. We see a strong distinction to be made here with any consideration that a specific level of relative prices should be established between the combined price of UCLL and UBA and the UFB prices, which we reject as inconsistent with section 18 and the promotion of competition.

[215] Commerce Commission "Final determination on the benchmarking review of the unbundled copper local loop service" (3 December 2012), NZCC 37; Commerce Commission "Unbundled Bitstream Access Service Price Review, Decision [2013] Final determination to amend the price payable for the regulated service Chorus' unbundled bitstream access made under s 30R of the Telecommunications Act 2001" (5 November 2013), NZCC 20.

429. We provide additional detail, including responses to submissions and in particular in relation to how the UCLL price may promote competition for the long-term benefit of end-users, in the sections below.

Initial considerations

430. As part of the FPP process, we engaged Professor Ingo Vogelsang to provide advice on the appropriateness of an uplift of the UCLL price, which would in turn flow through to the UBA aggregate price.[216] Professor Vogelsang's three main conclusions were:

430.1 There is unlikely to be a promotion of competition for the long-term benefit to end-users from upwardly biasing UCLL (and therefore UBA) prices, because this would result in higher retail prices for copper-based services.

430.2 There may be positive network externality effects from higher UCLL (and therefore UBA) prices:[217]

> Innovation benefits will come from the financial benefits for other networks and for content providers serving these networks. Additional externalities will accrue to the pre-existing subscribers of these services, who benefit from the additional or cheaper content made available to them.

430.3 The positive network externality effects for UFB subscribers are likely to exceed the negative externalities imposed on remaining subscribers of the copper network.

431. In a report responding to Professor Vogelsang's 2 July 2014 report, CEG (economic advisors to Chorus) argued that Professor Vogelsang's approach in reaching the first of his conclusions above is too narrow, in that:[218]

> He simply considers whether consumers will be better or worse off in the near term after the price increase, having regard to their loss in consumer surplus from the price rise itself and any compensating effects on quality of service.

432. The CEG report instead argued that:[219]

> the appropriate test should be whether the *conditions and environment* for competition are improved relative to the case where there is no price rise" (emphasis original).

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216 Ingo Vogelsang "The effects of the UCLL contribution to the UBA aggregate on competition for the long-term benefit of end-users in New Zealand telecommunications markets" 2 July 2014. Note that we discuss the issue of relativity between the UCLL and UBA prices in paragraphs 454-476 of this draft decision.

217 Ingo Vogelsang "The effects of the UCLL contribution to the UBA aggregate on competition for the long-term benefit of end-users in New Zealand telecommunications markets" 2 July 2014, paragraph [29].

218 Competition Economists Group "Promoting competition: review of Vogelsang" August 2014, paragraph [36].

219 Competition Economists Group "Promoting competition: review of Vogelsang" August 2014, paragraph [47].

433. We agree that a price increase could be consistent with promoting competition for the long-term benefit to end-users. However, the TSLRIC model will provide a central estimate of cost, and so the issue we are considering here is whether there should be an uplift of price beyond that central estimate.

434. The August 2014 CEG report[220] analysed the competitive effects of a price uplift under three headings and we follow this approach, given that, when considering what best gives, or is likely to best give, effect to the section 18 purpose statement, our overall consideration is what promotes competition for the long-term benefit of end-users. We then consider the issue of externalities, before concluding.

Effect on competition on the copper network i.e. unbundling

435. In its August 2014 report, CEG argued that a higher UCLL (and therefore UBA) price would promote competition for the long-term benefit of end-users because it would:[221]

> make Telecom [Spark] less inclined to widely unbundle which, if it was to occur, would be likely to result in the inefficient duplication of infrastructure without sufficient offsetting benefits in terms of improved product differentiation or market growth

436. While it may be the case that an increase in the UCLL price would reduce Spark's incentive to unbundle, it is not clear to us that unbundling by Spark would be inefficient. Competition in markets generally entails some degree of duplication of assets, and CEG has not demonstrated that the costs of duplication in the present case would be greater than any benefits.[222, 223]

437. We also note that CEG's argument is not so much that a price uplift would promote competition, but that a price uplift would deter inefficient competition.

Effect on competition between RSPs on different networks

438. The CEG report argued that:[224]

> higher UCLL prices can be expected to hasten migration to UFB – a platform upon which scale advantages are less important to RSPs relative to the copper network, and on which competition may therefore be less susceptible to distortions through differences in the size of operators.

439. CEG singles out the possibility of Spark unbundling, on the basis that "this is likely to provide it with a significant advantage in the copper network by virtue of its size".[225]

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220 Competition Economists Group "Promoting competition: review of Vogelsang" August 2014.

221 Competition Economists Group "Promoting competition: review of Vogelsang" August 2014, paragraph [19].

222 Professor Vogelsang makes a similar point at paragraph 17 of his 6 November 2014 report – Ingo Vogelsang "Report on several submissions in the FPP proceeding for UCLL" 6 November 2014.

223 Indeed, CEG noted that, "The limited time available for this consultation has meant that this has required some speculation on our part.", Competition Economists Group "Promoting competition: review of Vogelsang" August 2014, paragraph [58].

224 Competition Economists Group "Promoting competition: review of Vogelsang" August 2014 paragraph [19].

440. In our view, the CEG report has not demonstrated this point. There are many markets where there are scale advantages, but in which we nevertheless observe a variety of different size businesses with different strategies.[226]

441. Indeed, the CEG report itself appears equivocal about the nets costs or benefits of competition over copper versus UFB.[227] We note that scale may be important in the provision of some services over fibre.[228] Again, while we accept the UCLL (and SLU) price may impact on unbundling through its impact on scale, it is the UBA increment which primarily affects unbundling and we consider this in the UBA FPP.

Effect on competition between Chorus and other networks (LFCs)

442. The CEG report argued that:[229]

> where Chorus is not the LFC, any increase in the UCLL price is likely to make little or no difference to the conditions and environment for competition

443. Rather, the CEG report argued that it is the underlying cost structure of networks that is relevant to competition between them.[230] We agree with this point, although we would add that the technical features of networks could also affect competition between them (eg, fixed versus mobile, speed, etc).

444. In the UBA IPP we noted that:[231]

> Where Chorus is not the LFC – In those LFC areas where Chorus is not the UFB provider, there is the potential for direct competition between Chorus' copper network and the other LFCs fibre network in attracting access seekers to use their wholesale inputs. This competition could be intense including the potential for Chorus to price its services below the regulated price cap and/or invest in enhancing the capabilities of the copper network. Applying a higher UBA price (which reflects a price cap) is unlikely to have any effect on the competition between the copper network and fibre networks in areas Chorus is not the UFB fibre provider.

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225 Competition Economists Group "Promoting competition: review of Vogelsang" August 2014 paragraphs [66]-[71].

226 The Commission notes that CallPlus, despite on CEG's logic facing a cost disadvantage to an unbundling Telecom, argues that a price uplift and migration onto fibre would damage its business, with negative implications for competition and the long-term benefit to end-users (CallPlus "Submission on the Commerce Commission's Consultation Paper: Proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [4]).

227 Competition Economists Group "Promoting competition: review of Vogelsang" August 2014 paragraphs [66]-[71].

228 For example, a larger player may have an advantage in obtaining exclusive content.

229 Competition Economists Group "Promoting competition: review of Vogelsang" August 2014 paragraph [74].

230 Competition Economists Group "Promoting competition: review of Vogelsang" August 2014 paragraph [74].

231 Commerce Commission "Unbundled Bitstream Access Service Price Review, Decision [2013] Final determination to amend the price payable for the regulated service Chorus' unbundled bitstream access made under s 30R of the Telecommunications Act 2001" (5 November 2013), NZCC 20, paragraph [218].

445. We consider this analysis is equally valid for the UCLL (and SLU) price determinations and would not support any adjustment of the price from our modelled central estimate of the TSLRIC price on the basis of the section 18 purpose statement.

Externalities

446. The other argument made in submissions for a price uplift is that it would encourage increased migration to UFB and the higher value services that might be offered over UFB. Chorus refers to the spillover effects on other markets and the economy in general, and also of classic network externalities.[232]

447. Professor Vogelsang provided the following view in respect of externalities:[233]

> The UCLL price increase could, however, carry some further positive welfare effects worth considering. These include, in particular, innovation effects on UFB and potential spillovers on other markets and the whole economy and conventional network externalities from migration to new services. While the innovation effects are likely to occur, they are also likely to be small and will be less pronounced in areas, where Chorus is not the UFB provider. One can argue that the subsidized UFB build-out reflects a political decision about the value of the spillover effects. Overall, in my view, the positive network externality effects of a UCLL price increase for UFB subscribers are likely to exceed the negative externalities imposed on remaining subscribers of copper-based services.

448. Some submitters have expressed a different view. For example, WIK stated:[234]

> Without providing any proof Vogelsang claims that positive network externality effects of a UCLL price increase for UFB subscribers exceed the negative externalities on copper-based services. For us it is basically an empirical question whether this relationship holds or not. This analysis has not been conducted by Vogelsang or anybody else, at least as far as we can see.

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232 Chorus "Cross-submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 20 August 2014, paragraph [31].

233 Ingo Vogelsang "The effects of the UCLL contribution to the UBA aggregate on competition for the long-term benefit of end-users in New Zealand telecommunications markets" 2 July 2014, paragraph [44].

234 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [43].

449. Along similar lines, Vodafone states in its 20 August 2014 submission:[235]

> As WIK observes, the nature and value of any positive externalities is an empirical question. The Commission has presented no quantitative analysis supporting its assessment and it cannot simply assume the operation of these effects. Where quantitative assessment of this issue cannot be done, it is incumbent on the Commission to conduct a far more robust qualitative assessment than is set out in the Proposed Views Paper.
>
> The Commission's proposed view, endorsed by Chorus, that positive externalities are likely to exceed the value of negative externalities is therefore entirely speculative. As it stands, there are no reliable grounds for settling on this view or for believing that the operation of positive externalities will generate a result that best promotes competition for the long term benefit of end-users of telecommunications services.

450. In his subsequent report Professor Vogelsang agreed that there is no empirical analysis to draw on, and any such analysis would be too complex and would lack quantitative data.[236] Instead, Professor Vogelsang's view is that this:[237]

> is therefore a typical situation for regulators to use their judgement. My judgement in this case was based (a) on the declining customer base for copper versus the increasing customer base for UFB, (b) on the expectation that investments in copper-based applications are largely sunk so that less of them will be lost if the customer base shrinks, and (c) on the expectation that new applications for UFB services require an increased customer base.

451. In our view, the observations by WIK and Vodafone do not invalidate Professor Vogelsang's analysis of externalities, and we agree with his analysis. We continue to hold the view (as set out in the UBA IPP) that there is an asymmetric cost issue, which would give weight to erring on the high side to avoid the negative consequences on the long-term benefits of end-users of setting a price that is too low.

452. We note in this respect we consider that the externalities and spillover effects which are relevant are those which accrue to (or harm) end-users of telecommunications users in New Zealand rather than the potential wider effects.[238]

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235 Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraphs [B3.3] and [B3.4].

236 Ingo Vogelsang "Report on several submissions in the FPP proceeding for UCLL" 6 November 2014, paragraph [3].

237 Ingo Vogelsang "Report on several submissions in the FPP proceeding for UCLL" 6 November 2014, paragraph [3].

238 As Vogelsang notes "A question is if spillovers and externality effects can be included as considerations under the LTBEU in s18. They are definitely not part of TSLRIC as correctly measured and would therefore have to be considered as consumer benefits. Such consideration as being in the LTBEU is fairly straightforward for benefits that directly accrue to consumers. It becomes somewhat of a stretch for spillovers to the economy in general, such as productivity effects from the internet. Such spillovers should therefore be the concern of explicit subsidies or other policies than the TSLRIC determination." Ingo Vogelsang, "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand, 25 November 2014, paragraph [18].

Conclusion on section 18 consideration

453. In conclusion, we consider that the unadjusted central estimate of the TSLRIC price produced by our modelling decisions is likely to best give effect to the section 18 purpose statement.

Relativity

We must consider the relativity between the UCLL service and the UBA service

454. Section 19(b) requires us to consider any additional matters specified in Schedule 1 regarding the application of section 18. For the UCLL/UBA services, that additional matter is the relativity between the UCLL service and the UBA service.

455. The UCLL and UBA services relate to each other because access seekers can "unbundle" a cabinet or exchange. To unbundle, access seekers install their own DSLAM in the cabinet/exchange. To provide a broadband service to end-users served by that cabinet/exchange, they only need to purchase the UCLL service from Chorus and not the UBA service. Where access seekers do not unbundle, they must purchase the UBA service from Chorus in order to provide a broadband service to end-users.

456. This relationship between the UCLL and UBA services is reflected in the FPP for the UBA service, which is to take the price for UCLL and then add to it the "TSLRIC of additional costs incurred in providing" the UBA service.[239]

457. The relativity of the price of UCLL service to the price of UBA service will therefore affect incentives to unbundle. The price of UBA service is the price of UCLL service plus the price of additional costs incurred in providing the UBA service, which we term here "the UBA increment". The greater the UBA increment is, the greater the incentive on access seekers to unbundle. The UBA increment is the price access seekers avoid by unbundling.

458. The Act requires us to consider relativity, including incentives to unbundle, regarding the application of section 18,[240] and section 18 is concerned with competition for the long-term benefit of end-users. The ability of access seekers to unbundle allows access seekers to compete with Chorus in relation to the UBA service. Access seekers can purchase the UBA service from Chorus or install their own DSLAMs to avoid the need to purchase that service.

459. In our further consultation paper of 14 March 2014, we sought views on the role of relativity throughout the FPP pricing review determination processes for the UCLL and UBA services, and in particular whether parties consider that there are additional matters or evidence that we should take into account regarding relativity in the FPP pricing review determinations.[241]

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239 Subpart 1 of Part 2 of Schedule 1 of the Telecommunications Act 2001.

240 Telecommunications Act 2001, [s 19(b)] and in Subpart 1, Part 2, Schedule 1.

241 Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" (14 March 2014), paragraph [4].

460. In its submission, Chorus disagreed with the proposition that applying TSLRIC pricing rules to the UCLL and UBA services can be assumed on its own to satisfy the relativity consideration. In its view, relativity should be used in the exercise of judgement that is involved in applying TSLRIC and making a decision that best promotes section 18.[242] Chorus argued that relativity requires us to "…grapple with the ladder of investment and copper to fibre migration implications",[243] and lists a range of factors to which we "will presumably wish to turn [our] mind" as follows:[244]

> …UCLL in the market, the absence of SLU unbundling, that some say the ladder of investment is dead, the significant shift in the industry structure and FTTH policy and implications for migration to fibre and other change in the industry, what [the Commission] considers is efficient investment and what it does not and how [the Commission] makes those judgements.

461. Chorus submitted that the relativity consideration has further complexity if the UCLL and SLU prices differ (as they do under the IPP benchmarked approach), because in those circumstances there is a different uplift/differential between SLU and UBA, and between UCLL and UBA.[245] A related point in Chorus' submission is whether the UBA price is the same for cabinetised and non-cabinetised lines (as is currently the case), or disaggregated across UCLL and SLU lines.[246] On this point, we do not consider that it would be in the long-term benefit of end-users to have different prices for UBA on cabinetised and non-cabinetised lines, which we have explain earlier in this chapter.

462. Chorus also submitted that we need to ask whether the relativity consideration is sufficient to allow efficient investment, taking account of density considerations and having regard to relevant matters to form that view.[247]

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242 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraphs [151]-[153].

243 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraph [153].

244 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraph [154].

245 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraphs [34] and [164].

246 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraph [139.2].

247 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle – Consultation Paper (14 March 2014) and Supplementary Paper (25 March 2014)" 11 April 2014, paragraphs [35] and [140].

463. CallPlus agreed with Chorus that applying TSLRIC pricing rules to the UCLL and UBA services cannot be assumed on its own to maintain relativity considerations.[248] CallPlus submitted that we should favour investment when considering relativity. CallPlus referred to:[249]

> …competitors on the ladder whose business models rely heavily on their ability to leverage their unbundled investments in order to create compelling consumer propositions both copper and fibre. Without the ability to refresh, keep current and make a return on those investments the ability of those competitors to transition to the fibre world will be seriously impacted.

464. Conversely, Spark submitted that prices determined under TSLRIC were not susceptible to further adjustment on relativity grounds.[250] Spark submitted that although the ladder of investment may have formed part of the policy framework for the 2006 reforms to the Act, it has little relevance to today's legislative framework following the 2011 amendments.[251] In Spark's view, relativity requires us to take a consistent approach to determining a TSLRIC cost-based price of each relevant service.[252]

465. We further consulted on relativity in our July 2014 regulatory framework and modelling approach paper, where we provided a preliminary view that "…the relativity consideration guides us less towards attempting to promote further investment in the form of unbundling, and more towards the efficiency aspect of the section 18 purpose."[253] Alongside this paper we also published an expert report from Professor Ingo Vogelsang, which examines the effects of the UCLL contribution to the UBA aggregate price on competition.[254] This complements the expert advice provided during the UBA IPP pricing review.[255]

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248 CallPlus "Cross Submission on the further consultation on issues relating to chorus' UCLL & UBA services" April 2014, paragraph [22].

249 CallPlus "Cross Submission on the further consultation on issues relating to chorus' UCLL & UBA services" April 2014, paragraph [26].

250 Telecom "UCLL and UBA FPP: further consultation and supplementary paper - Cross submission" 30 April 2014, paragraph [77].

251 Telecom "UCLL and UBA FPP: further consultation and supplementary paper - Cross submission" 30 April 2014, paragraph [80].

252 Telecom "UCLL and UBA FPP: further consultation and supplementary paper - Cross submission" 30 April 2014, paragraph [83].

253 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [79].

254 Ingo Vogelsang, "The effects of the UCLL contribution to the UBA aggregate on competition for the long-term benefit of end-users in New Zealand Telecommunications markets" (2 July 2014).

255 Ingo Vogelsang, ""What effect would different price point choices have on achieving the objectives mentioned in s 18, the promotion of competition for the long-term benefit of end-users, the efficiencies in the sector, and incentives to innovate that exist for, and the risks faced by investors in new telecommunications services that involve significant capital investment and that offer capabilities not available from established services?" (5 July 2013).

466. We have received further submissions on our approach to relativity laid out in the July 2014 regulatory framework and modelling approach paper and on the expert report of Professor Vogelsang. Several submitters supported our preliminary position without further commenting on the framework of relativity, including Chorus,[256] Spark[257] and Vodafone.[258]

467. CallPlus submitted that relativity remained a critical issue for its business and consequently an important consideration for competition in New Zealand.[259] CallPlus and Orcon had previously submitted that, while they accept that if both the UCLL and UBA prices are cost-based then this should provide for relativity, we should consider the risk that the prices calculated for the FPP may differ from true forward-looking costs and may result in margin squeezes that could have an anti-competitive effect.[260]

468. Wigley and Company raised several concerns with the Commission's preliminary view and approach to relativity. In particular it raised the consideration of margin squeeze and the danger of asymmetric costs of inadvertently setting the UCLL and UBA prices such that relativity was too small. To implement this it advocated considering further the use of a real-world access seeker to test a "relativity standard".

469. Wigley and Company further submitted that allowing for relativity does not necessarily increase prices to end-users because the UCLL price could be reduced rather than the UBA price increased.[261]

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256 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" (6 August 2014), paragraph [210].

257 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach" (6 August 2014) paragraph [78].

258 Vodafone "Comments on consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" (6 August 2014) [paragraph E1.5]. Vodafone noted that it had a different view on the nature of efficiencies at play. Vodafone, "Cross-submission on consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL service" (20 August 2014), paragraphs [B3.1] to [B3.4]. We believe this issue concerns the implementation of relativity rather than the framework for addressing relativity.

259 CallPlus Limited, "Submission on the Commerce Commission's Consultation Paper: Proposed view on regulatory framework and modelling approach for UBA & UCLL services" (6 August 2014), paragraphs [3] - [4].

260 CallPlus and Orcon, "Submissions by CallPlus and Orcon following the further consultation paper and the workshops" (11 April 2014), paragraphs [10.1] - [10.19].

261 Wigley+Company Solicitors, "Submission on consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL", August 2014, paragraphs [234] - [255].

470. Our view remains that the correct position on relativity may lie somewhere in between the approaches articulated by the various submitters. Relativity regarding the application of section 18 is a mandatory consideration in its own right under the Act (s 19(b)). It is the relativity of the price of UCLL services to the price of the UBA service that is relevant to incentives to unbundle. Relativity in respect of uniform incentives for unbundling across cabinetised and non-cabinetised lines is reflected in our approach to determining the SLU price such that the regulated price is the same across cabinetised and non-cabinetised lines.

471. In relation to CallPlus' submission, we note that the 2011 amendments to the Act were expected to dis-incentivise further unbundling in urban areas, but that existing unbundlers were protected to some degree by the transitional arrangements that would apply until 2014.[262] In particular, the arrangements have provided the opportunity for unbundling investments to be recovered. Our draft decision on the UBA increment would suggest that significant recovery has, de facto, occurred.

472. We note that the ladder of investment is not only reflected in the relativity principle, but in the staggered nature of the designated access services described in Schedule 1 of the Act.[263]

473. As we have previously noted, Spark's submissions on the UBA IPP Price Review Conference illustrated that there are other drivers, apart from unbundling, that are relevant to access seekers' incentives to invest in local loop services.[264] In particular, the migration to fibre is affecting access seekers' investment intentions in a way that means that we cannot be sure that any incentives we attempt to introduce through these pricing review determinations in favour of unbundling will in fact lead to unbundling, or will instead simply result in end-users paying more. In terms of our obligations under sections 18 and 19, we must do what we consider best gives, or is likely to best give, effect to promoting competition in telecommunications markets *for the long-term benefit of end-users*. Accordingly, we would need to be persuaded that attempting to incentivise unbundling would promote efficient investment decisions in a way that is likely to benefit end-users.

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[262] See also, Telecom "UCLL and UBA FPP: further consultation and supplementary paper - Cross submission" 30 April 2014, paragraph [82].

[263] See Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" (14 March 2014), Attachment A (James Every-Palmer "FPP determination: Issues re service description and the modern equivalent asset" (12 March 2014)), paragraphs [23]-[27].

[264] Commerce Commission "Unbundled Bitstream Access Service Price Review - Update on matters relevant to the UBA price review" (13 August 2013), paragraph [104]. See also John Wesley-Smith's comments on behalf of Telecom at the UBA Price Review Conference on 13 June 2013 (Transcript at 240): "I want to be really clear about this, we do not want to undertake large-scale unbundling. We see that as creating a disincentive for migration to fibre. It requires a large upfront investment on Telecom's part which is not in keeping with an overall strategy of driving our customer base towards fibre. That is - that's categorical… the greater the increment above UBA cost that you put the IPP and the FPP at, the greater the incentive on us to unbundle will be, and we will resist that for as long as we can because we want to support UFB."

474. For similar reasons and because we are considering the wider efficiency effects as well as competitive effects when considering the section 18 purpose statement, we do not believe setting relativity against the actual costs of an existing access seeker would necessarily be in the long-term benefit of end-users. We note also that, as mentioned above, the transitional arrangements in respect of the UBA price have allowed unbundlers some compensation in respect of their unbundling investments.

475. In terms of considering relativity for setting the UCLL price and the SLU price, we believe the primary method through which regulated prices can affect unbundling is the UBA increment. This UBA increment is the cost which can be avoided by an access seeker by investing in its own equipment in Chorus' exchanges. Consequently we believe the relativity consideration has less relevance in setting the UCLL and SLU prices. We recognise the submission from Wigley and Company that we can consider lowering the UCLL price as well as increasing the UBA price to maintain relativity. However we believe such considerations would raise wider section 18 considerations, such as the considerations that led to an uplift in the UBA IPP review[265] and which we consider are still relevant to the UCLL price determination.

476. We have also considered the issue of relativity in considering whether or not to aggregate prices across cabinetised and non-cabinetised lines. We discussed this earlier in this chapter.

[265] Commerce Commission "Unbundled Bitstream Access Service Price Review, Decision [2013] Final determination to amend the price payable for the regulated service Chorus' unbundled bitstream access made under s 30R of the Telecommunications Act 2001" (5 November 2013), NZCC 20, paragraphs 216-241.

Attachment A: Demand for UCLL

Purpose

477. This attachment sets out our earlier views, industry responses, subsequent analysis and draft decisions relating to the demand for UCLL.

Our draft decisions

478. We have established a network demand footprint for UCLL that includes all current copper connections prior to UFB migration. However, we are only allowing the capital expenditure for what we consider the hypothetical efficient operator would invest in without requiring a capital contribution.

479. Our draft decision is to model a hypothetical efficient operator that does not need to compete to gain or retain customers:

    479.1 instant take-up of demand on the hypothetical efficient operator's network;

    479.2 a fully loaded network – 100% demand; and

    479.3 constant demand during the regulatory period;

480. We consider it is appropriate to remove properties within the Christchurch Red Zone from modelled demand.

Network demand footprint

481. The network demand footprint determines the number of connections over which total modelled costs will be spread, and informs where the hypothetical network will be deployed.

482. In our December 2013 process and issues paper, we proposed that the relevant demand for this UCLL TSLRIC analysis was the end-users of Chorus at a given point in time, including end-users that may subsequently migrate to Chorus' fibre network. We recognised that the New Zealand specific factors relevant to this modelling choice may differ from those in Europe. However, as we are modelling a hypothetical entrant, Chorus' mix of copper and fibre connections is not a relevant consideration.[266]

[266] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013, paragraph [79].

483. Having considered submissions on our December 2013 UCLL process and issues paper and July 2014 regulatory framework and modelling approach paper, we now consider the demand footprint for the UCLL service in the context of:

483.1 firstly, what is the network demand footprint, for which we consider a geographic boundary (under the Network Footprint sub-heading); and

483.2 secondly, within the network footprint, how should we treat demand that resides on the alternate network infrastructure (under HFC, UFB, Satellite and Mobile sub-headings).

Network demand footprint

484. In order to determine a network demand footprint for the hypothetical efficient operator, we considered where the hypothetical efficient operator would be likely to deploy its network.

485. Our understanding is that other jurisdictions model the full cost of the connection base – reflecting a USO. These jurisdictions require the incumbent operator to maintain a USO (100%) coverage requirement. However, in New Zealand we have a TSO that reflects 100% coverage as at 2001, ie, the TSO coverage is historic not contemporary. We understand we are in a unique position. Although not legally required to, we consider it is appropriate for the hypothetical efficient operator to meet (at least) the coverage requirement that Chorus is obliged to under the TSO. Accordingly, we have used the TSO network coverage as our starting point for where a hypothetical efficient operator would deploy its network, but we have then considered whether our hypothetical efficient operator deploys further, which is typically more remote rural areas.

486. The investment required from the hypothetical efficient operator to serve remote rural connections significantly raises the average cost of supplying the service. We are aware that Chorus requires capital contributions as a condition for connecting remote users, who are generally able and willing to pay for a connection. If a group of customers in a remote rural area paid to be connected to Chorus' network, we would not consider it appropriate to review the UCLL price to include the high costs of serving those end-users in the prices charged to all end-users.

487. Accordingly, we have sought to identify the connections that we consider would fall into this category that we consider to be remote rural. We have developed a proxy, as there is no definitive way to categorise these end-users in any straightforward manner.

488. In doing so, we establish an initial investment boundary round clusters of premises based on the 2001 TSO. As stated above, we consider it is appropriate for the hypothetical efficient operator to invest and maintain TSO connections. However, we were also required to determine whether or not the hypothetical efficient operator would connect premises in addition to the existing TSO coverage. We have reached the preliminary view that additional premises *within* the boundary would be likely to be connected by the hypothetical efficient operator (with both capex and opex being incurred by the hypothetical efficient operator), but premises *outside* would only likely to be connected where a capital contribution was provided by the end-user (with only opex being incurred by the hypothetical efficient operator).[267]

489. Accordingly, we have established a demand footprint for UCLL that includes all copper connections, but the capital expenditure involved in connecting premises outside our TSO-derived boundary will be deducted.[268]

HFC

490. We consider that HFC is a competing access network to copper, UFB fibre, and our hypothetical MEA network.

491. End-users that have both a copper and HFC connection to their house will be included in the modelled costs, as the MEA access that replaces the copper line needs to be deployed and maintained, irrespective of whether it is active/in-use.

492. Where the HFC connection is active, these connections will be excluded from our unit cost calculations. Our reasoning for this approach is based on the European Commission recommendation, which notes:

> "In other words, stability would be reached by calculating the access costs of an NGA network and thus counteracting the volume effect (due to decreasing demand) which has been leading to higher unit costs. Such volume effects would see copper prices rising as customers switch to NGA products, because the same cost base of copper would be distributed between a smaller number of lines. In the proposed methodology, the model includes both copper and NGA lines, and therefore only traffic volume moving to other infrastructures (e.g. cable, mobile and alternative operators' fibre) would entail an inflation of unit costs".

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267 We have also considered whether some properties within the boundary would not be connected absent a capital contribution. In our view, there may be some properties which would fall into this category, but as a counter-balance, there may be some properties outside this boundary which would be connected without capital contributions. We note that it is likely that properties within the boundary will include infill properties for which an efficient operator seeking to gain economies of scale and scope would serve. Consequently we do not propose to exclude any properties within our TSO-derived boundary.

268 We recognise that the TSO reflects Telecom's network footprint at a point in time (Dec 2001), ie, connections, rather than the geographic boundary we are using. All subsequent connections (2002 to present) within our proposed boundary are therefore technically excluded from the TSO. However, we have elected to include these urban connections (~14% of total connection base) and their costs, as they do not change the average cost. The connections beyond our boundary (6.4% of total connection base) are included, but their capital costs (relate to 47.5% of total road network) are excluded.

> "Next generation loops have at least the same potential as copper loops to be replicated since fibre constitutes the competitive response to alternative infrastructures such as mobile and cable. Most likely, fibre has more potential for competition as it is capable of delivering greater functionalities, to further expand the demand and to lower entry barriers (especially if regulated access to the civil engineering is ensured). Some alternative operators are already deploying their own fibre networks and new business models are emerging (such as co-investment)".[269]

493. This means that for the European Commission, HFC ("cable") is a competitive platform. Accordingly, we do not consider migration would occur and therefore the costs of these inactive lines must be recovered by the remaining active MEA connections.

494. We acknowledge that our treatment of HFC demand differs from WIK's submissions made on behalf of Spark and Vodafone in response to our July 2014[270], that there should in principle be no difference between the number (and structure) of access lines which inform the dimensioning of the access network and the number of access lines which bear the cost. However, together with TERA's model reference paper, we consider that we have provided sufficient reasons for our approach.[271]

UFB

495. We consider UFB (and significant parts of RBI for that matter) to be more akin to a replacement of, rather than a competitor to, the existing copper network.

496. A significant part of any TSLRIC exercise is asset valuation, that is identifying what an efficient, modern replacement for the existing copper network looks like.

497. We have determined that within all UFB regions the MEA for UCLL is fibre. It logically follows that if deployed, the hypothetical efficient operator network would negate the need for the UFB roll-out. Accordingly, we agree with TERA that it is appropriate for all end-user demand within UFB regions to be modelled and included in our unit cost calculations.[272]

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269 European Commission recommendation on costing methodologies, Impact assessment, 2013 (p.44)

270 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [57].

271 TERA MRP "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 2.5

272 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, sections 2.5.1 and 2.5.3. By way of an alternative, we have considered framing non-Chorus UFB as either a competitor, or an area an efficient operator wouldn't deploy. The competitor angle would be consistent with HFC reasoning i.e. connection costs are included with active lines excluded from volume. Alternatively, an efficient operator wouldn't deploy/compete with subsidised fibre network (without regulated duct access) and therefore costs and volume within these regions are excluded i.e. no difference between cost base and volume base.

498. WIK also agrees, stating that it is the logical consequence of the Commission's MEA approach to consider 100% of all fixed line access connections as the relevant demand for calculating UCLL costs.[273]

499. We understand Chorus considers our approach to UFB demand to be inconsistent with TSLRIC.[274] We disagree. We accept that Chorus' approach was open to us, but have elected to follow the advice of our experts – TERA[275] and Professor Vogelsang, who notes that:[276]

> Since the MEA is both an actual replacement of the copper lines and the hypothetical replacement, the relevant state of demand is that for retail copper access before its decline in demand. This holds to the extent that former copper access subscribers have not vanished but have migrated or are migrating to either mobile or UFB services. Thus, the FTTH access network is the MEA already now even if it has not yet been (fully) built.

500. TSLRIC modelling is not about Chorus recovering the full replacement costs from remaining end-users of providing a copper network, but rather setting an efficient price cap on the UCLL service.

Satellite

501. Satellite is a competing access network to copper in rural areas, but is not in our view a close substitute to our hypothetical MEA network – for a given cost, FWA MEA based on LTE delivers superior performance to satellite.

502. Accordingly, the costs and associated volume of end-users that have both a copper and satellite connection will be included in the model.

Mobile and other fixed wireless

503. We have not modelled mobile or non-RBI fixed wireless substitution, as we were not convinced by Anaylsys Mason that there is material volume, but welcome further views from parties.[277]

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273 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [54].

274 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [96].

275 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 2.5.3.

276 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 8 September 2014, paragraph [23(a)].

277 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, p. 19.

Demand take-up and migration

504. Demand take-up and migration is relevant for calculating unit costs over time. Our modelling assumptions will determine how rapidly the hypothetical network will reach full load, and then whether, as the result of changes in the market, migration to or away from the network should be modelled.

505. In relation to the time the hypothetical efficient operator's network takes to reach full load, our July 2014 Consultation Paper suggested three alternatives:[278]

> demand which ramps up to 100% demand over time, reflecting either a quick or graduated build-up of demand on the modelled network;
>
> demand which reflects expected migration pattern away from the modelled network to alternative networks; and
>
> all demand with neither migration to, or away, from the modelled network.

506. In relation to migration to or away from the hypothetical efficient operator's network, we stated in July 2014 that models that reflect migration of demand to the network, or migration away from the network, will impose additional costs on end-users which are not necessarily efficient.[279]

507. In response to July 2014, Chorus submitted that assuming 100% demand, with no migration to other networks, fails to take account of market reality in the context of the UFB roll-out and therefore underestimates the unit cost of supplying the services.[280] The Commission's approach was, in their view, a departure from TSLRIC conventions[281] – noting that economic depreciation or adjusted tilted annuity approaches can take account of demand changes.[282]

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278 Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [233].

279 Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [235].

280 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [3.8].

281 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [83].

282 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [3.8].

508. WIK, on behalf of Spark and Vodafone, takes a contrary view to Chorus, stating that only considering Chorus' copper access lines would not be consistent with the Commission's MEA and asset valuation approach. WIK further states that any migration or ramp-up of demand is conceptually misguided, and that 100% of all fixed line access is the relevant demand for calculating UCLL costs.[283]

509. We consider that our assumptions of instant take-up with no migration are efficient because they result in a price that would cover for any piece-meal refurbishment, replacement, or expansion of the hypothetical efficient operator's network.

510. In this regard, Professor Vogelsang advised that:[284]

> TSLRIC is conceptually based on an expanding market, where additional capacity is being installed. Since a large portion of the copper-related costs are sunk and some overcapacities develop, true forward-looking costs will therefore be much lower than TSLRIC as traditionally calculated by regulators. Also in this stage of the market an operator in a competitive environment would wish to take advantage of wholesale demand to defend its position against competing technologies. But if TSLRIC were still measured based on the old technology this would lead to price increases because of the smaller quantity base over which then fixed costs would have to be spread. Summing up, in the face of long-term declining demand relying on the TSLRIC standard for the old technology would induce unnecessary over-capacities and allocative inefficiencies in copper networks.

511. We agree with Professor Vogelsang, and continue to hold the views that, modelling instant take-up to a fully loaded network and constant demand during the regulatory period is appropriate.

Demand within the Christchurch Red Zone

512. Following the 2011 Canterbury earthquakes large areas of Christchurch were declared Residential Red Zones. Areas have been zoned red where the land is damaged so badly by the earthquakes that it is unlikely it can be rebuilt on for a prolonged period.

513. The Canterbury Earthquake Recovery Authority (CERA) has confirmed that there is no demand for telecommunication services within the Residential Red Zone area within the regulatory period. Further, they note the extent of the Residential Red Zone area may change with time.

514. There are about 8,000 properties within the Residential Red Zone that are either vacant or will shortly be vacated (based on data from Corelogic NZ Limited). Once these properties have been vacated any remaining buildings will be demolished.

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283 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [54].

284 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 8 September 2014, paragraph [10].

515. Based on CERA's assessment, the land is unlikely to have significant building undertaken within the regulatory period. Consequently, the UCLL and UBA demand within the Christchurch Earthquake Residential Red Zone area is deemed to be zero for the purposes of our modelling.

516. Accordingly, our approach to modelling the Red Zone is as follows:

516.1 Properties within the Christchurch Red Zone will be removed from TERA's model to reflect there will no demand for services within this area. Demand that once existed in this area has shifted to other locations within Christchurch (i.e. northern suburbs) and farther afield so it will be picked up in the areas where the connections now exist. We assume that an efficient operator would not build a network to service this area now that connections do not exist so we do not consider it appropriate to leave them in the model;

516.2 Although the model will remove all parts of the road network that have no demand (and will not therefore be trenched), the roads within the Residential Red Zone will still be included in the model. Leaving roads in the Residential Red Zone that do not have connections will not impact on the total length of trenches. However, it will enable those properties that abut Residential Red Zone areas and that are serviced by a road network that passes through the Residential Red Zone to be connected to the TERA model by the most efficient route; and

517. The cabinets within the Residential Red Zone that will also be removed from the model as an efficient operator would not place cabinets in areas where there are no services and no demand. The cabinets outside of the Residential Red Zone will have their coverage areas extended to pick up the demand points outside of the Residential Red Zone that would have previously been serviced by the cabinets within the Residential Red Zone.

Attachment B: Selecting the MEA for the UCLL service

Purpose

518. This attachment sets out our considerations, and responds to submissions from interested parties, on our selection of the MEA for the UCLL service.

Our draft decisions

519. In selecting our MEA for the UCLL service, we have considered the "core functionality" of the service that, in our view, the MEA technology must be capable of providing.

520. Our view is that the service we model must allow an access seeker to provide voice services and broadband services to end-users. That is, the service must allow end-users to send and receive traffic.

521. We have also given weight to other network features, such as point-to-point and the ability to unbundle at layer 1. While we have given weight to these features, we do not consider them to be determinative for our MEA selection. For instance, we have given less weight to the ability to unbundle in rural areas where we consider unbundling is less likely to happen.

522. Following consideration of submissions on our July 2014 regulatory framework and modelling approach paper, our draft decision is that we will model FTTH, and at the edges of the network we will model FWA.

523. We have given additional weight to technologies that provide a point-to-point connection and allow unbundling at layer 1 level. Consequently, for the FTTH network we prefer to model a point-to-point network rather than GPON.

524. Our draft decision is that FWA should be confined to the current and projected RBI FWA footprint. While we have taken a conservative approach to the extent of FWA in the modelled network, our view is that expanding the FWA boundary outside the RBI FWA footprint may be inconsistent with our consideration of technical factors, such as the observed network roll-out in New Zealand. We consider that unbundling is likely to be more feasible in areas outside the RBI FWA footprint, and therefore we gave greater weight in these areas to technologies that can be unbundled.

Analysis

525. As outlined in our framework, we are using the concept of the MEA to determine what a hypothetical efficient operator would build today to provide the UCLL service.

526. Chorus submitted that, consistent with a focus on a conventional application of TSLRIC, the selection of the MEA for the UCLL service should first involve the service being identified, and then an appropriate MEA selected that is capable of providing that service.[285]

527. Vodafone and Wigley and Company both submitted that, while they disagreed with Chorus' view that we must model the full functionality of the service, they agree that we must set out our view of the "core functionality" of the UCLL service before selecting the MEA.[286]

528. We agree that to select our MEA for the UCLL service we must first set out the "core functionality" of the service that the MEA technology must be capable of providing.

529. Our view is that the service we model must allow an access seeker to provide voice services and broadband services to end-users. That is, the service must allow end-users to send and receive traffic.

530. We have given weight to other network features, such as point-to-point and the ability to unbundle at layer 1, in selecting our MEA. While we have given weight to these features, we do not consider them to be determinative for our MEA selection. For instance, we have given less weight to the ability to unbundle in rural areas where unbundling is unlikely to be feasible.

531. For example, we do not consider FWA to be the appropriate nationwide MEA. Although it meets what we consider to be the "core functionality" of the UCLL service and would likely cost less to deploy than fixed technologies, in our view it would not be deployed by a hypothetical efficient operator nationwide based on other considerations such as operator strategy.

532. Based on our view of "core functionality", we consider the following technologies are eligible for consideration as the MEA for the UCLL service:

    532.1 copper/FTTN;

    532.2 FTTH (both point-to-point and G-PON);

    532.3 FWA;

    532.4 HFC; and

    532.5 mobile.

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285 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [223].

286 See Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [D2.5]; and Wigley and Company "Cross submission on consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL" August 2014, paragraph [9.1].

533. Chorus submitted that FWA should be excluded on the basis that FWA cannot be unbundled at layer 1 and therefore "does not replicate the most basic functionality of UCLL".[287]

534. We disagree on the basis that FWA meets what we consider to be the "core functionality" of the UCLL service. As access seekers can use FWA to provide voice and broadband services to end-users we consider it eligible for consideration as the MEA for the UCLL service.

535. In our July 2014 regulatory framework and modelling approach paper, based on advice from TERA, we considered the following factors in considering which technology we would select as our MEA:

535.1 technological performance;

535.2 cost;

535.3 operator strategy; and

535.4 subscriber and retail price.

536. We discuss each in turn below.

Technical performance

537. TERA advised us that FTTH, HFC and FWA provide the same or higher downstream and upstream capacity as copper. TERA also considered that technologies offering dedicated capacity for end-users are likely to provide better performance to consumers than technologies offering shared capacity as there is greater control of the physical medium and unbundling is possible.

538. TERA concluded that point-to-point FTTH was the best MEA candidate based on technological factors, given the high speeds it delivers and that its point-to-point architecture offered dedicated capacity to each end-user.

Cost

539. TERA noted that it is difficult to predict whether the cost of a FTTH and FWA network will cost less than copper. However, its overall recommendation favoured FTTH for the following reasons:

539.1 a FTTH network offers higher speeds over longer lines than copper/FTTN;

539.2 cable prices tend to suggest that the cost of FTTH will decrease in comparison to copper; and

539.3 opex on FTTH is significantly less than for copper.

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[287] Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [39].

540. Chorus submitted that if we select a fibre MEA for our cost model, we must include the costs of "fixes" to a fibre network that would enable it to provide the services that ends-users use today, so that the hypothetical fibre network could replicate the full functionality of the UCLL service Chorus provides.[288] This goes to the heart of Chorus' contention that a MEA must be able to deliver all the services that Chorus currently delivers, such as faxes, or is otherwise not available to us.

541. Spark and WIK disagreed with Chorus, submitting that the services and equipment described by Chorus are not part of the UCLL service description in the Act or STD and therefore would not be provided by a hypothetical efficient operator.[289] In practical terms, a hypothetical efficient operator would not build a network today with an aim of ensuring that faxes can be delivered.

542. As outlined in Chapter 1, we are undertaking an assessment of the costs incurred by a hypothetical efficient operator replacing Chorus' network. We do not consider the cost of replacing end-user equipment, or "fixes" to enable that equipment, relevant to our assessment. We consider this consistent with the requirements of the Act and the comments of the Court – that is, this is not an exercise limited by real world considerations as contended by Chorus.[290]

543. We note that the cost of deployment increases substantially at the edges of the network, where end-users are furthest from the nodes and furthest from other end-users. Accordingly, we consider that a hypothetical efficient operator is likely to consider FWA in these areas.

544. Given the difficulty of predicting whether a FTTH and FWA network is less costly than a FTTN network, we asked TERA to model both.

Operator strategy

545. TERA recommended that, based on observed operator behaviour, FTTH is likely to be the MEA for copper in most areas, while FWA is more likely in some rural areas. TERA noted that FTTH had been chosen by the Government for its UFB programme, while FWA technology had been preferred in very remote areas.[291]

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288 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraphs [302]-[316].

289 Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraph [66]; and WIK-consult "Cross submission In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services "" 6 August 2014, paragraph [12].

290 *Chorus v Commerce Commission* [2014] NZCA 440 at [30].

291 TERA Consultants "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services: - Modern Equivalent Assets and relevant scenarios" July 2014, pp. 31-32.

546. Analysys Mason submitted that TERA placed considerable weight on this factor and that it did not believe that operator strategy was correct as a means of selecting the MEA, or consistent with the choice of the most efficient technology to provide the UCLL service according to a specified list of criteria.[292] We consider it is a factor open to us to take into account as it is likely to be a relevant consideration for a hypothetical efficient operator.

547. We note that the Government, through the RBI policy, has decided that FWA is likely to best meet the needs of end-users in rural areas.

548. Accordingly, our view is that operator strategy provides relevant insight into the considerations a hypothetical efficient operator is likely to make in deploying its network.

Subscriber and retail price

549. TERA concluded that the FTTH take-up rate suggests that subscribers are increasingly requiring the capabilities offered by FTTH. Users are often ready to pay more for the superior experience offered by these services. However, TERA noted that this factor is less relevant than the others, given the uncertainty surrounding consumer prices, preferences and choices.

550. We did not receive any submissions on this factor.

Having considered the above factors, we have selected point-to-point FTTH with FWA on the edges of the network as the MEA for the UCLL service

551. TERA's recommendation was that the MEA for the UCLL service should be FTTH for the majority of the network, and FWA in less dense areas.

552. Following consideration of submissions on our July 2014 regulatory framework and modelling approach paper, our view is that we will model FTTH, and at the edges of the network we will model FWA.

553. As noted above, we have given additional weight to technologies that provide a point-to-point connection and allow unbundling at layer 1 level. Consequently, for the FTTH network we prefer to model a point-to-point network rather than GPON.

554. While Vodafone and Spark supported inclusion of FWA, they argued that FWA coverage should not be restricted to the edge of the network. Specifically Vodafone submitted that we should not arbitrarily confine the "edge" to the current and projected RBI fixed wireless footprint.[293] Spark made a similar submission.[294]

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[292] Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, p. 9.

[293] Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G2.1].

[294] Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [126].

555. Our draft decision is that FWA will be confined to the current and projected RBI FWA footprint. While we have taken a conservative approach to the extent of FWA in the modelled network, our view is that expanding the FWA boundary outside the RBI FWA footprint may be inconsistent with our consideration of technical factors, such as the observed network roll-out in New Zealand. We consider that unbundling is likely to be more feasible in areas outside the RBI FWA footprint, and therefore we gave greater weight in these areas to technologies that can be unbundled.

Adjustments

556. In the July 2014 regulatory framework and modelling approach paper we stated our preliminary view that we would also model a FTTN/copper network, and consider a cost adjustment to the FTTH MEA if FTTN/copper network was cheaper, subject to section 18 considerations.

556.1 Spark supported our preliminary approach to model both networks and adopt the FTTN/copper network costs where they provide a low cost option.[295]

556.2 Vodafone supported modelling both networks but that we should be explicit that we will adopt the least cost solution.[296] Vodafone also submitted that we should include FWA in the FTTN/copper network.

556.3 Chorus/Analysys Mason supported our decision to model both a fibre and copper network. However, Analysys Mason's view was that an adjustment was not necessary because if copper was the lowest cost technology then copper must be considered the MEA.[297]

557. Following consideration of submissions, we have also decided to model a FTTN/copper network alongside our FTTH with FWA network.

558. Although our MEA remains FTTH with FWA, our view is that that we would adjust the cost if the FTTN/copper network was less costly than the FTTH with FWA network, to reflect the different capabilities of the network.[298]

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295 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraphs [131]-[132].

296 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G7.1(a)].

297 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, p. 4.

298 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 2.1..

559. Our draft decision to consider an adjustment based on cost differences was made after further consideration of submissions on the alternative approaches[299] and section 18 reasoning[300] discussed in the July 2014 regulatory framework and modelling approach paper.

560. In the July 2014 regulatory framework and modelling approach paper we stated that considerations of for reasonable investor expectations led to our rejection of these alternative (capability-based) approaches.[301]

561. In their response, Chorus stated that:[302]

> The Commission has rightly emphasised the link between regulatory predictability and certainty, investor expectations and levels of investment, and the promotion of competition for the long-term benefit of end users. The Commission is right to observe that investors have expected a conventional application of TSLRIC.

562. Spark noted that:[303]

> …there is considerable disagreement about which investors are being considered; when those expectations were set; whether they are reasonable; and whether those expectations are anticipated to be static or move with other developments in the market and evolutions in regulatory best practice. It is accordingly difficult to understand how any link can be established between such investor expectations and detailed modelling assumptions (such as re-use and performance-based adjustments).

563. As we have explained in Chapter 1, we no longer use the concept of "reasonable investor expectations" as an independent consideration when considering what best gives effect to the section 18 purpose statement. Our revised approach to the application of TSLRIC is to give weight to greater predictability of approach, by generally adopting an orthodox TSLRIC approach, but we no longer attempt to identify and give weight to reasonable investor expectations as a separate exercise.

564. Accordingly, we have reconsidered our views on MEA adjustments. We consider that our stated approach to give weight to predictability leads us to reject capability-based adjustments.

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299 Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraphs [175]-[181].

300 Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraphs [80], [86], [126], [127].

301 Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraphs [80], [86], [126], [127].

302 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [272].

303 Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraph [33(c)].

565. As Spark notes:[304]

> While an adjustment to the FTTH costs for lower copper performance would be preferable if viable, we appreciate the difficulties associated with consumer preference or technology performance based approaches.

566. TERA has also previously highlighted the difficulties in implementing a capacity-based adjustment.[305]

567. We consider that a MEA adjustment on the basis of consumer preference or technological performance would be very difficult to estimate in practice and is likely to introduce a degree of unpredictability, and is therefore not supported in this draft decision.

304 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [132].

305 TERA Consultants “TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services: Modern Equivalent Assets and relevant scenarios” July 2014, pp. 41-42.

Attachment C: Network optimisation

Purpose

568. This attachment sets out our draft decisions on the:

568.1 degree of optimisation in the access model;

568.2 optimisation of exchange buildings in the model; and

568.3 use of private roads, motorways, access ways and railway corridors in the model.

Our draft decisions

Degree of optimisation

569. As is common internationally, we have adopted a modified scorched node approach for the modelled network. Accordingly, TERA has modelled an "optimally structured network" which is constrained by the existing number of nodes and their existing locations, and follows the road network.

570. TERA has recommended minor modifications to the exchange boundaries, as defined by Chorus, to take into account the location of notional exchanges and network connectivity constraints imposed by the adoption of a theoretical network that is based on the road network.[306] We agree with TERA's recommended approach.

Optimisation of exchange buildings

571. We have modelled the size of exchange buildings based on a bottom-up calculation of the required space and equipment.

572. Chorus has also provided data regarding relevant modern sites consisting of blueprints of a number of sites and linking their current sites with the relevant modern buildings. Where available, TERA has used this information alongside its bottom-up calculation to model the most efficient deployment.

Treatment of private roads and motorways

573. The model includes use of motorways as, in our view, an efficient operator would be likely to make use of motorways where it is efficient to do so. Our model has also made use of private roads on the basis that a hypothetical efficient operator would pay consent costs and obtain access to lay fibre on private land where efficient to do so.

[306] For a list of situations where TERA has made modifications see TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 2.6.1.5..

Degree of optimisation

574. In December 2013 we set out the following approaches to optimising the modelled network:[307]

574.1 no optimisation (which occurs in a top-down or bottom-up approach). Under this option, the number, location, topology and function of exchanges and cabinets in the current network are retained in the analysis. Additionally, the existing network infrastructure (for instance ducts and poles) is also retained and the network is not optimised to reflect projected demand;

574.2 complete optimisation ("scorched earth"). Under this option, the network is fully optimised. This scorched earth approach allows complete redesign of the network, without considering any past investment and existing node locations/numbers. This approach removes all of the inefficiencies that may have arisen due to the historical development of the network. However, this approach may not reflect a number of real world issues such as the sunk, irreversible nature of some of the investments that the regulated operator has made, such as the number and the location of local exchanges;

574.3 scorched node optimisation. This approach lies midway between the previous two options. Under this option, the number, locations and functions of major network nodes (eg exchanges) are left as they are. The access network is then optimised with respect to the number, location and function of the minor nodes (eg cabinets) and the efficient routing and dimensioning of the local access network between these points and end-users' premises. This is therefore a trade-off between efficiency and real world/historic investment considerations; or

574.4 modified scorched node optimisation. This option is a variant of the scorched node approach. Under this approach, there is a greater degree of flexibility on the level of network scorching that occurs.

575. We noted that a modified scorched node approach is widely used internationally by regulators. The approach has significant practical advantages as it corresponds to a more realistic efficiency standard and acknowledges (to a degree) real world investment decisions made by the network operator, while allowing for optimisation where efficiencies can be identified. It also allows for a greater degree of flexibility in approach.[308]

[307] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013, paragraph [93].

[308] Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013, paragraph [95].

576. Wigley and Company, on behalf of Orcon, submitted that the Act requires us to model the MEA using a scorched earth approach, as any other approach would not reflect forward-looking costs.[309]

577. We disagree. Forward-looking costs reflect the costs that a network operator would incur if it built a new network today using assets collectively referred to as the MEA. As we noted in Chapter 1, the Act affords us discretion in the degree of optimisation built into the model.

578. We consider both a scorched node or modified scorched node level of optimisation to be consistent with "forward-looking". Our view is that while a scorched earth approach is also consistent with a forward-looking approach, we prefer the modified scorched node approach as better suited to meet our TSLRIC objectives. In particular:

    578.1 a scorched earth approach may set an unrealistic standard for incremental build-outs for which a modified scorched node approach is better suited. Given a national roll-out is less likely than an incremental build, we consider that a modified scorched node approach is likely to better promote efficient investment; and

    578.2 regulators in other countries have also typically adopted a scorched node or modified scorched node approach.[310] In our view, a modified scorched node approach therefore better aligns with our TSLRIC objective of predictability, including the fact that it is an orthodox approach.

579. Accordingly, we have adopted a modified scorched node approach for the modelled network. This means modelling an "optimally structured network" which is constrained by the existing number of nodes and their existing locations and follows the road network.

580. TERA has recommended minor modifications to the exchange boundaries as defined by Chorus to take into account the location of notional exchanges and network connectivity constraints imposed by the adoption of a theoretical network that is based on the road network. We agree with TERA's recommended approach.

581. Consequently, we have adopted the MDF nodes of the current copper network and the boundaries of each MDF area as the boundary of the ODF areas of the fibre network as proposed by TERA in the MEA paper.[311] TERA's model reference paper sets out the situations where modifications have been made to the scorched node approach, and why.[312]

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309 Wigley and Company "UBA AND UCLL FPP Price Review Determinations – Memorandum for Cross-submissions on behalf of Orcon" 30 April 2014, paragraphs [2.1]-[2.26].

310 Commerce Commission "Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 6 December 2013, paragraph [94].

311 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services: - Modern Equivalent Assets and relevant scenarios" July 2014, p. 48.

312 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 2.6.1.5.

Optimisation of exchange buildings

582. As a consequence of network equipment becoming smaller in size and exchange equipment no longer being used by Chorus, a number of Chorus' buildings will not be fully utilised leaving empty space within the buildings. This raises the issue of whether to maintain the size of Chorus sites to reflect the historical deployment or to model optimised sites that reflect what a hypothetical efficient operator would deploy, given the modern equipment available.

583. Modelling the actual size of Chorus' sites and basing the cost on this is equivalent to a top-down approach to costing buildings, where the costs are based on the cost of the actual buildings and on Chorus providing a service it no longer provides (PSTN-voice).

584. We consider that adopting this approach is likely to overestimate the cost for a hypothetical efficient operator, as it will include costs which are not relevant given the modern equipment available and the services provided. In addition, we would expect that with ongoing technological development these larger sites would not be required.

585. Modelling optimised sites and basing the cost on this will be equivalent to a bottom-up approach to costing buildings, where the costs are based on the space required for the services provided.

586. Accordingly, our approach is to model the size of buildings based on TERA calculating what is required given the modelled demand of the services provided and the modern equipment required to provide those services. We consider that this approach is consistent with how a hypothetical efficient operator would dimension exchange buildings.

587. Basing the calculation of the size and therefore cost of required sites in the model on a bottom-up approach, reflects the efficient costs of building an equivalent service today as we consider that a hypothetical efficient operator would not be deploying sites larger than required.

588. Chorus has provided us with data regarding relevant modern sites consisting of blueprints of a number of sites and linking their current sites with the relevant modern buildings. Where available, TERA has drawn on this information to determine what, in its expert opinion, is the most efficient deployment.

Use of private roads and motorways in the model

589. As we note above, the optimised network follows the road network. Models overseas often exclude use of motorways as gaining access is generally prohibitively difficult. However, in New Zealand network operators have access to motorways under the Act which defines a road as:[313]

> **road** includes—
>
> (a) a street and any other place to which the public have access, whether as of right or not; and
>
> (b) land that is vested in a local authority for the purpose of a road as shown on a deposited survey plan; and
>
> (c) all bridges, culverts, ferries, and fords that form part of any road, street, or any other place referred to in paragraph (a) or paragraph (b)

590. The National Code of Practice for Utility Operators' Access to Transport Corridors (legislated under the Utilities Act 2010), provides a mechanism for an application for a utility operator to have access to carry out works on a motorway corridor by applying for a Corridor Access Request.[314] Information provided by the Telecommunication Companies shows that fibre network is regularly placed on private land and motorways.[315] While there is no automatic right of access for utility companies to work on roads, we consider that it is common practice in New Zealand for telecommunications cables (copper and fibre) to be installed in road, rail and motorway corridors.

591. Accordingly, our model includes use of motorways as a hypothetical efficient operator would be likely to make use of motorways where it is efficient to do so. There are, however, likely to be additional consent and traffic management costs incurred in laying fibre along motorways. Our model has also made use of private roads on the basis that a hypothetical efficient operator would pay consent costs and obtain access to lay fibre on private land where efficient to do so. Consequently, TERA have included a degree of weighting to minimise the use of private roads and motorways when calculating the shortest path from an individual property to an exchange building.

313 Telecommunications Act 2001, s 5.

314 National Code of Practice for Utility Operators' Access to Transport Corridors, paragraph 4.1.1.

315 Notice to Supply Information to the Commerce Commission Sections 98(a) and (b) Commerce Act 1986, 17 April 2014, paragraph [6.5].

Attachment D: Network deployment

Purpose

592. This attachment sets out our approach to determining how FWA and aerial infrastructure should be modelled in the access network.

593. We are deploying a FTTH and FWA network. The FTTH network can be deployed aerially, underground or a combination of both. Modelling FWA requires us to choose the optimal deployment method, and also where we consider a hypothetical efficient operator would deploy FWA.

594. Network deployment may impact on both capex and opex. As a general point we consider that aerial deployment is likely to cost less than underground overall, but to require greater opex.

Our draft decisions

FWA deployment

595. For the FWA coverage areas we have ensured that 100% of customers within each FWA coverage area can be connected to the network in the following way.

595.1 Capping the number of premises that can be served by a FWA tower at 67 end-users per coverage area. This will ensure that each end-user connected to the network is guaranteed sufficient bandwidth for the provision of voice and broadband services.

595.2 To determine which end-users will be served by FWA within each FWA coverage area, TERA has identified, through an estimation, the most expensive premises to connect in that area.[316]

595.3 The most expensive 67 premises are served by the FWA infrastructure, with the remaining premises connected by point-to-point fibre to the nearest exchange.

Aerial deployment

596. We have considered modelling aerially only in areas where there is existing EDB aerial infrastructure. We have estimated this area to be approximately 51% of the UCLL coverage area based on data we have sourced from EDB information disclosure.

597. Accordingly, for the access model, we have modelled:

597.1 49% of service lead-ins using aerial infrastructure; and

597.2 36% of distribution cables using aerial infrastructure.

316 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Specification" November 2014, section 6.2.

We have modelled FWA on the edges of the network where FTTH is most expensive

598. As noted above in the MEA section, we have decided to model FWA at the edges of the network.

599. Chorus submitted that if we decide to model FWA, we should model the cost of FWA infrastructure that serves 100% of end-users, in the coverage area.[317] Chorus noted that when there is a requirement to connect 100% of customers in a coverage area, FWA becomes substantially more expensive.

600. We agree that the network must be capable of connecting all end-users and that FWA on its own may not be capable of doing so within each FWA coverage area. Accordingly, we have taken the following approach to modelling FWA:

600.1 TERA have applied an engineering rule such that the number of premises that can be served by a FWA tower is capped at 67 per coverage area. This will ensure that each end-user connected to the network is guaranteed sufficient bandwidth for the provision of voice and broadband services;

600.2 within each FWA coverage area, TERA has then identified, through an estimation, the most expensive premises to connect in that area;[318] and

600.3 the most expensive 67 premises are then served by the FWA infrastructure, with the remaining premises connected by point-to-point fibre to the nearest exchange.

601. This approach ensures that the end-users connected to a fixed wireless tower are guaranteed bandwidth such that they will receive performance sufficiently comparable to existing copper services.

We have modelled FWA using LTE technology

602. A choice regarding the FWA technology must be made. We have considered 3G and LTE technologies.

603. LTE provides much better performance than 3G and is essentially the same technology as ADSL running over a radio carrier. Unlike 3G, the coverage area does not change with loading with LTE, so dimensioning is a much simpler exercise.

604. Generally, LTE is technically superior to 3G and is currently being commercially deployed in New Zealand cellular networks using the 700 MHz band. Consequently, we have modelled FWA using LTE on the 700 MHz band which will mean that both the performance and the coverage will be quite different to that currently achieved by Vodafone for RBI.

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317 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [341].

318 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Specification" November 2014, section 6.2..

605. We have assumed that the hypothetical efficient operator has access to a 2x20 MHz allocation of spectrum. Since the telecommunications operator that we postulate in our TSLRIC cost modelling exercise is a hypothetical one, we are not constrained to reflect in our modelling all the realities of the "real world" that a business would face if it was actually building a new network. We assume access to a suitable allocation of spectrum but also attribute a cost to this.

606. We have modelled the cost of access to this spectrum using the results of the recent 700 MHz spectrum auction. That is, we have assumed the hypothetical efficient operator would gain access to spectrum (whether it won it at auction, leased it from another operator, or was specifically allocated spectrum by the government to ensure broadband access in more remote areas), and at the price that operators actually paid in the real world.

Aerial deployment in the access network

607. To determine where we will model the access network using aerial infrastructure we have been guided by where, in our view, a hypothetical efficient operator would be likely to do so.

608. Chorus submitted that the best approach for a hypothetical efficient operator deploying an aerial network would be to limit it to areas where there are already existing aerial networks.[319] Incite, on behalf of Chorus, concluded that seeking to deploy a completely new aerial network would not be practical, as it is unlikely to be granted resource consents.

609. While a hypothetical efficient operator may seek to deploy its network aerially in areas without existing infrastructure, there may be considerable consenting barriers to doing so. Given we are uncertain of the likelihood that a hypothetical efficient operator would gain consent to deploy aerial infrastructure in these areas, or the costs incurred in gaining consent, our draft decision is to model the network in these areas using underground infrastructure. Therefore, we have limited our consideration of aerial deployment to areas where there is existing aerial infrastructure.

610. Chorus submitted that the majority of existing aerial infrastructure in New Zealand is owned by Chorus and EDBs.[320] Our view is that EDBs' existing aerial infrastructure is likely to provide a good proxy for where a hypothetical efficient operator would seek to deploy its network aerially.

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319 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [79.2].

320 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [379].

611. EDB information disclosure shows that 51% of EDBs low voltage (less than 400V) networks are deployed using aerial infrastructure.[321] Given that EDB distribution networks are likely to follow similar routes to the modelled network, our view is that a hypothetical efficient operator would consider deploying its network aerially on 51% of routes.[322]

612. Although Chorus supports consideration of aerial deployment, it noted that in areas where there are EDB poles, EDB networks do not serve all demand – instead, the EDB is dependent on Chorus' overhead network to serve demand on one side of the street. Chorus referred to advice from Incite that the hypothetical efficient operator would not have access to Chorus poles, and would be unlikely to receive consent to deploy a new aerial network.[323]

613. Our view, however, is that we are modelling the efficient replacement costs of Chorus' network. Replacing Chorus' aerial infrastructure with underground would likely lead to a less cost efficient deployment than Chorus' actual network. Accordingly, where Chorus has consent to deploy its network aerially, we have assumed that the hypothetical efficient operator would have the ability to replace Chorus' aerial infrastructure with its own.

How we have determined the percentage of aerial cable in the modelled network

614. We must then determine the percentage of each cable type that a hypothetical efficient operator would deploy in its network. Given we are modelling a FTTH network we have therefore considered:

    614.1 distribution cable between the exchange and fibre access terminal; and

    614.2 service lead-ins from the fibre access terminal to the external termination point on the end-users' premises.

615. For the distribution cable, we note Chorus' submission that it is targeting 20% aerial deployment in its UFB areas.[324] We consider this number to be a floor for aerial deployment as Chorus' UFB deployment is limited to urban areas only, while we have treated the percentage of EDB aerial routes as a ceiling. We have also considered information provided by Northpower and Ultrafast Fibre regarding their UFB aerial deployment.

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321 Percentage by circuit length. See http://www.comcom.govt.nz/dmsdocument/11318.

322 We consider it reasonable to assume that the routes for electricity distribution and telecommunications access are similar.

323 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [378].

324 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [59].

616. Having considered the extent of aerial deployment by network operators in New Zealand and their differing constraints, we consider it reasonable that a hypothetical efficient operator would target deployment of aerial network within this range. Accordingly, we have modelled 36% of the network using aerial infrastructure.[325]

617. For the percentage of service lead-ins to model aerially, Chorus has not been able to provide information on the number of premises served aerially, while the EDB data only provides information on the percentage of circuit length that is aerial.

618. Therefore, we have approximated the number of premises served by aerial lead-ins. To do so we have calculated a national weighted average percentage of end-users served by aerial lead-ins.[326] Table 8 below outlines how we have calculated the percentage of end-users served by aerial lead-ins.

[325] TERA has also modelled the same percentage of overhead for the FTTN network.

[326] Total customer base served by the EDB multiplied by the percentage of aerial low voltage cable (less than 400V).

Table 8: Estimated customers served by aerial infrastructure by EDB area[327]

	Customer base	Est % of EDB customer overhead	Average number of customers served by overhead
Alpine Energy	31,212	56.4%	17,589
Aurora Energy	82,656	57.9%	47,871
Buller Network	4,578	80.1%	3,668
Centralines	8,328	74.4%	6,194
Counties Power	37,507	60.8%	22,790
Eastland Network	25,556	67.6%	17,275
Electra	112,875	53.2%	60,080
Electricity Ashburton	17,727	27.0%	4,790
Electricity Invercargill	17,247	6.6%	1,140
Horizon Energy	24,722	46.2%	11,416
MainPower	36,717	29.4%	10,810
Marlborough Lines	24,445	61.6%	15,060
Nelson Electricity	9,067	18.1%	1,638
Network Tasman	37,291	47.7%	17,779
Network Waitaki	12,306	87.0%	10,711
Northpower	54,134	66.9%	36,224
Orion	189,962	43.8%	83,278
OtagoNet	14,798	94.7%	14,008
Powerco	321,957	56.3%	181,320
Scanpower	6,770	64.6%	4,372
The Lines Company	23,499	70.9%	16,651
The Power Company	34,574	80.0%	27,644
Top Energy	30,603	26.2%	8,033
Unison	109,316	40.4%	44,154
Vector	536,035	43.5%	233,208
Waipa Networks	23,830	67.5%	16,074
Wellington Electricity	164,789	40.8%	67,190
WEL Networks	84,707	48.3%	40,932
West Power	13,092	52.0%	6,812
Total	**2,077,208**	**49.5%**	**1,028,711**

Source: Commerce Commission

619. We have therefore modelled 49% of service lead-ins using aerial infrastructure.

[327] Data sourced from http://www.comcom.govt.nz/dmsdocument/11318.

Attachment E: Asset valuation

Purpose

620. This attachment outlines our earlier views, submissions, subsequent analysis and draft decisions regarding the asset valuation methodology used in our TSLRIC model. A key aspect of this is how we treat reusable assets, and civil engineering assets, such as ducts and trenches, that are unlikely to be replicated.[328]

Our draft decision

621. Our draft decision is to use optimised replacement cost (ORC) as our asset valuation methodology. We have not differentiated between reusable and non-reusable assets. The main reasons for this are:

621.1 we consider that adopting an alternative methodology would weaken the predictability of the regulatory framework. Such a move can have longer-term costs to end-users from its adverse impact on investment incentives; and

621.2 in our view, in practice, the alternative methodologies have limitations which may impact on their potential benefits. Most notably failure to recognise the opportunity costs of fully depreciated assets that are still in use.

We have considered the asset valuation methodologies presented in submissions

622. In our July 2014 regulatory framework and modelling approach paper, our preliminary view was to value all assets at ORC, whether assets are reusable or not.

623. We based that preliminary view to value all assets at ORC on our concern to respect reasonable investor expectations.[329] As we have explained in Chapter 1, we no longer use the concept of "reasonable investor expectations" as an independent consideration when considering what best gives effect to the section 18 purpose statement. Our approach to the application of TSLRIC is to give weight to greater predictability of approach, by generally adopting an orthodox TSLRIC approach, but we no longer attempt to identify and give weight to reasonable investor expectations as a separate exercise.

624. Accordingly, we have reconsidered our preliminary views regarding asset valuation without a particular concern to respect reasonable investor expectations. We have reconsidered asset valuation under the regulatory framework outlined in Chapter 1. We seek your views on our reasons for our draft decision, which are outlined below.

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328 We consider reusable assets as civil engineering assets owned by Chorus, and not third party assets.

329 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services", 9 July 2014, paragraphs [80], [86], [126], [147]-[148].

625. We received submissions outlining a number of asset valuation methodologies available to us, including the:

625.1 Anchor pricing methodology;

625.2 Dual asset valuation methodology, with ORC for non-reusable assets and historical indexation for reusable assets;[330]

625.3 Depreciated optimised replacement cost (DORC); and

625.4 Optimised replacement cost (ORC).

626. We have considered each of these asset valuation methodologies.

We do not consider that modelling forward-looking costs requires us to use an optimised replacement cost methodology

627. Chorus has submitted that we can only interpret the words “forward-looking costs” in the Act’s definition of TSLRIC as requiring current replacement costs[331] or ORC.[332] Other submitters suggest other approaches to asset valuation are open to us, such as DORC, and that we should adopt those approaches.

628. Submissions, in response to our July 2014 regulatory framework and modelling approach paper, re-emphasised the difference between ORC and the modifications to the asset valuation methodology recommended by the European Commission (EC) and the regulator in Switzerland.

629. We disagree with Chorus that the words "forward-looking" in the Act's definition of TSLRIC mean we are limited to only using current replacement costs or ORC to value all the assets in our model. We consider that forward-looking TSLRIC models can apply other approaches to asset valuation and it is open to us to choose such an approach.

We consider that any asset valuation methodology should consider opportunity costs

630. WIK submitted that “reusable legacy civil engineering assets still in use but fully depreciated are not to be included in the RAB.”[333]

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330 This is the methodology recommended in the European Commission’s (EC) new Guidelines.

331 Chorus "Submission in response to the Commerce Commission’s Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [266]. See also Chorus "Submission in response to the Commerce Commission’s Process and issues paper for determining a TSLRIC price for Chorus’ unbundled copper local loop service in accordance with the Final Pricing Principle" 14 February 2014, paragraph [78]. See also Analysys Mason "Report for Chorus - Response to Commission" 12 February 2014, pp. 1-4.

332 Chorus "Submission in response to the Commerce Commission’s Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [269].

333 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission’s “Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)”" 5 August 2014, paragraph [16].

631. CEG argue that if an asset is still being used it has not reached the end of its life. It is, therefore, not fully depreciated in any meaningful economic sense.[334] In this regard, CEG argue that "One significant (and economically incorrect) aspect of WIK's proposal to value reusable assets is its view that fully depreciated assets should be excluded."[335]

632. Frontier expressed a similar view to WIK:[336]

> Typically in the access network there are assets of over 50 years, such as ducts, which are still used, even where the assumed asset life is shorter than this. Similarly copper cables, with a typical design life of 20 years, are not currently being replaced meaning that a number of cables may be fully depreciated. The investment in fully depreciated assets will already have been recovered through downstream prices. Including such assets in the asset base used to set prices will result in an over-recovery of costs.

633. We agree with CEG. We think it is incorrect to exclude assets that are unlikely to be replicated, but still in use. If an asset is still in use, it should be included.

634. Professor Vogelsang noted that using the dual asset valuation methodology would mean that fully depreciated assets would no longer be valued. This dual methodology does not recognise the opportunity costs of such assets. Professor Vogelsang advised that if we were to allow for re-use in a TSLRIC context we would have to calculate the remaining lifetime of such facilities and calculate the forward-looking costs based on a later replacement.[337]

635. We consider that opportunity costs are important to incentivise efficient investment decisions. As such, for the purpose of TSLRIC we consider that our asset valuation methodology should recognise opportunity costs and include assets that are fully depreciated, unlikely to be replicated, but still in use.

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334 Competition Economists Group "Non-replicable assets and forward-looking cost" August 2014, paragraphs [33]-[35].

335 Competition Economists Group "Non-replicable assets and forward-looking cost" August 2014, paragraph [33].

336 Frontier Economics "Cross-submission on UCLL TSLRIC modelling principles - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 16.

337 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 25 November 2014, paragraphs [15] and [90].

We prefer optimised replacement cost

636. Our draft decision is to use ORC to value the assets of the hypothetical efficient operator.

637. This is unchanged from our preliminary view in our July 2014 regulatory framework and modelling approach paper which was to value all assets at ORC, whether assets are reusable or not.[338] Our reasons are:

637.1 ORC is consistent with the interpretation of forward-looking costs in the context of TSLRIC;[339]

637.2 ORC is consistent with our previous approach to TSLRIC and therefore our TSLRIC objective of predictability;[340] and

637.3 in our view ORC is likely to best incentivise the efficient build or buy choice and so is consistent with our objective of efficient investment.[341]

We consider that accumulated gains from providing UCLL is not relevant to our TSLRIC modelling exercise

638. One of the main reasons the EC recommends a dual asset valuation methodology is to avoid over-recovery. WIK raised this in its submission, noting that the EC's recommended methodology avoids the risk of a cost over-recovery because major parts of the legacy civil infrastructure are often fully depreciated. The locking-in of the asset base ensures that once an asset is fully depreciated, this asset is no longer part of the asset base.[342]

338 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [148].

339 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [129].

340 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [138].

341 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [138].

342 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [17].

639. Submissions also argued that using only ORC may result in windfall gains for Chorus:

639.1 WIK recommended that compensation for ducts and poles be based on an appropriately indexed historic cost value, net of accumulated depreciation, in order to prevent over-recovery. [343]

639.2 Vodafone submitted that because reusable legacy civil engineering assets are unlikely to be replicated, there is a significant risk that valuing those assets at ORC would risk over-recovery (especially on assets that are fully depreciated).[344] Vodafone further argued that the European approach to allowing asset re-use "supports the outcomes which TSLRIC is intended to deliver", by ensuring that there is no over-recovery of those assets.[345]

639.3 Spark submitted that an efficient cost would reflect the re-use of existing assets.[346]

639.4 Frontier Economics argued that the use of an ORC methodology will result in access prices that depart from Chorus' actual costs.[347]

640. On the other hand, CEG for Chorus, argued that adopting a dual asset valuation methodology may lead to an under-recovery of costs.[348] Incenta Economic Consulting for Chorus advised that there is no *a priori* conclusion that ORC/DORC would lead to a windfall.[349]

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343 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [16].

344 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [E3.4].

345 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [E3.4].

346 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [57].

347 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 15 and Vodafone New Zealand Limited "Comments on process and issues paper for the unbundled copper local loop (UCLL) final pricing principle" 14 February 2014, paragraph [D4.3].

348 CEG argued that declaring an asset 'non-replicable' and switching between a (back-loaded) economic depreciation profile to a (front-loaded) straight line depreciation profile part way through its life will, other things equal, result in under-compensation for the initial investment. See Competition Economists Group "Non-replicable assets and forward-looking cost" August 2014, paragraph [21]. CEG also argued using a current valuation of old (partially or fully) depreciated assets (in accounting terms) is not biased in favour of delivering a windfall to Chorus. In contrast, if we were to follow WIK's advice and exclude those assets from the asset count it would not only be inconsistent with forward looking costs, but it would set up a method that was biased in favour of under compensation. See Competition Economists Group "Non-replicable assets and forward-looking cost" August 2014, paragraph [44].

349 Incenta Economic Consulting "Memorandum to Chorus on TSLRIC for UCLL service – asset valuation issues" 28 February 2014, p. 3.

641. We sought the opinion of Professor Vogelsang, who advised that:[350]

> If an adjustment to the now justified asset lives were made that would solve the asset valuation problem for the future but the regulated firms would keep the past windfall profit. By adjusting the value of the assets to a "re-use" value the windfall profits could be fully eliminated, because not only the depreciation rate but also the asset base would be adjusted. To get this exact result a historic costing approach is needed. In contrast, under TSLRIC the value for such an adjustment would be the "depreciated replacement value". Thus, if the current historic book value after 20 years were just zero but the asset still had 30 years in it the depreciated replacement cost value would be 60% of the current full replacement cost (assuming linear depreciation). That, however, would not eliminate the windfall gain fully. In contrast, because of the use of the historic value the EU approach will value the asset at zero and that would fully eliminate the windfall gain. However, in my view, one needs to distinguish a past mistake (the misjudgement of asset lives) from a systematic property of TSLRIC (the change in replacement cost and the forward-looking feature of TSLRIC cost accounting).

642. We consider that it is difficult to talk about windfall gains without drawing a line as to the valuation date. Trying to retrospectively impose a normal profit on Chorus is not possible in a forward-looking TSLRIC model.

643. Although we recognise that Chorus may have accumulated gains from providing UCLL over time, we do not consider that this is a TSLRIC issue, and so do not consider it relevant to our forward-looking TSLRIC modelling exercise.

We consider that optimised replacement cost is the orthodox asset valuation methodology

644. Chorus submitted that we should use ORC, with no differentiation between reusable and non-reusable assets. Chorus argued that using ORC for all assets is predictable, consistent with the Commission's previous approach, and best incentivises the efficient build or buy choice.

645. L1 Capital also supports the use of ORC for all assets in the TSLRIC model. L1 Capital submitted that this asset valuation methodology is widely adopted in other jurisdictions, is consistent with our past guidance and investor expectations about the network that was being modelled.[351]

646. We consider that ORC is the orthodox methodology based on New Zealand and international practices.

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350 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 8 September 2014, paragraph [92].

351 L1 Capital "Cross submission on regulatory framework and modelling approach consultation paper" August 2014, p. 3.

New Zealand practice

647. In 2002 and 2004, we considered alternative forms of asset valuation and concluded that ORC was appropriate for a forward-looking TSLRIC methodology.[352]

648. Chorus submitted that ORC is consistent with our previous approach in 2002 and 2004.[353]

649. Spark submitted that relying on TSLRIC methodologies considered in 2002 and 2004 could be a failure to consider all relevant choices, and that we should instead seek guidance from recent international experience giving best effect to competitive outcomes.[354]

650. We agree with Spark because to rely entirely on our previous approach in 2002 and 2004 may create the risk that, between 2004 and now, the TSLRIC concept has evolved and what was orthodox in 2004 may be quite different in current practice. As a result, we have considered the approach to asset valuation taken in other countries. This is discussed below at paragraphs 661-666.

651. In 2010, we noted in our submission to the Government review of the Regulatory Implications of Structural Separation that:[355]

> **Forward looking (and replacement) costs.** The underlying rationale for valuing assets on a forward looking cost basis is that prices are set on the basis of a hypothetical provider of these services. By basing prices on this basis, the correct pricing signals are given for entry, build or buy decisions.
>
> […]
>
> In practice **TSLRIC** (total service long run incremental costs) can use a combination of these [current and historic cost] elements. Where elements of the cost are subject to realistic replacement, replacement costs can be used, where the costs are sunk, historic costs can be used; another important practical element within this is the identification and attribution of common and fixed costs to prevent double recovery. This is highlighted when considering specific services in isolation (such as UBA).

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352 Commerce Commission "Implementation of TSLRIC pricing methodology for Access Determination under the Telecommunications Act 2001 - Principles Paper" (20 February 2004), paragraphs [133]-[137], and [142].

353 Chorus "Cross-submission in response to submissions on the Commerce Commission's Process and Issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop (UCLL) service in accordance with the Final Pricing Principle" 28 February 2014, paragraphs [31] and [39.5], and Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraphs [267] and [267.2].

354 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraphs [47]-[48].

355 Commerce Commission "Commerce Commission Response to MED Discussion Document 'Regulatory Implications of Structural Separation'" October 2010, p. 27.

652. Spark and Internet NZ submitted that our submission to the Government review shows that we have recognised that a TSLRIC model can use a combination of current and historic costs.[356]

653. While Spark and Internet NZ are correct that we have previously recognised the use of historic costs in TSLRIC models, our submission to the Government review does not establish that this approach is orthodox.

654. We also considered the Supreme Court's decision on TSO net costs. On 17 November 2011, the Supreme Court decision identified two key errors made by us in determining TSO net costs:[357]

654.1 the first error was the choice of valuation methodology; and

654.2 the second error was, having failed to adopt the correct valuation methodology, failing to model mobile technology.

655. The majority of the judicial opinions were critical of our adoption of an economic replacement cost methodology; in particular, our decision not to use a historic cost valuation methodology for sunk legacy assets.[358]

656. Spark indicated that the Supreme Court decision demonstrated that the New Zealand courts have also considered the difficulties associated with seeking to apply replacement cost methodologies to existing assets and potential revaluation gains. Spark submitted that this suggests that any approach that simply results in windfall revaluation gains to providers is unlikely to be acceptable in the New Zealand context.[359]

657. Chorus submitted that the historical context of TSO compensation is different. By its nature it is a backward-looking approach to identify costs that could have been avoided. The very purpose of TSLRIC prices for access services, and the clear Parliamentary intent and regulatory precedent, is to identify a forward-looking cost.[360]

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356 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraph [25]. InternetNZ, Consumer NZ and TUANZ "Cross submission by InternetNZ, Consumer NZ and TUANZ in relation to UCLL FPP Issues and Process Paper" 28 February 2014, paragraph [46].

357 Vodafone New Zealand Limited v Telecom New Zealand Limited [2011] NZSC 138 at [68].

358 Vodafone New Zealand Limited v Telecom New Zealand Limited [2011] NZSC 138 at [70].

359 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraph [28].

360 Chorus "Submission in response to the Commerce Commission's Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle" 14 February 2014, paragraph [14].

658. We agree with Chorus that the Supreme Court decision was made in a different context and related to determining the TSO net costs, which is backward-looking. Although the Supreme Court decision supported a historic cost approach to asset valuation in that particular context, we consider that this would be inconsistent with our forward-looking approach in this TSLRIC context. The TSO net costs calculation represented the efficient cost of Telecom providing services to commercially non-viable customers in a given past period. The majority judgement explained the effect of adopting the ORC methodology to partly or wholly depreciated assets which were not likely to be replaced and optimised as follows:[361]

> It is sensible to revalue on an optimised basis, say, a switch by attributing to it the lower value (price) of a new switch which performs the same or better function but is able to be acquired at a lesser price. It is quite another thing to attribute a modern equivalent value to an old asset which is not actually being replaced and for which no replacement could sensibly be introduced. All that does is to artificially inflate the value of the old asset and provide a windfall….

659. The judgement went on to quote the opinion of the Australian Competition Tribunal on the use of ORC, nothing that it was:[362]

> not satisfied that the use of a "hypothetical new entrant" valuation model was capable of generating appropriate estimates of the TSP's real costs, noting that such modelling "does not reflect costs actually faced by [the TSP], which has trenches, ducts, etc already in place". Nor would such a price reflect the TSP's legitimate business interests, which were "to receive a commercial return on its prudent (past) investment in the infrastructure used … not a hypothetical new investment".

660. The context in which we are required to select an appropriate methodology for the purpose of the FPPs is different. The use of a replacement cost methodology does not afford Chorus an unjustified windfall gain in this context, but is consistent with our task to model the network of a hypothetical efficient operator on a forward-looking basis.

<u>International practice</u>

661. Spark submitted that the models used by international regulators have been shown to best give effect to competitive outcomes and that if we consider recent models used by international regulators, we would find it difficult to justify a departure from the new EC Guidelines.[363]

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361 Vodafone New Zealand Limited v Telecom New Zealand Limited [2011] NZSC 138 at [70].

362 Vodafone New Zealand Limited v Telecom New Zealand Limited [2011] NZSC 138 at [71], quoting *Application by Telstra Corporation Ltd* [2010] ACompT 1 at [242], [244].

363 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [48].

662. CEG submitted that a replacement cost-based tilted annuity is consistent with the profile of compensation for these assets determined in the past based on benchmarked prices.[364]

663. We agree with CEG. In our review of the current international practice, we found that although the EC recommended a change in asset valuation for reusable assets, most countries are still using ORC for all assets.[365] The only country we are aware of that is currently applying asset re-use in a TSLRIC context is Croatia.[366]

664. We note that some countries are in the process of implementing a dual asset valuation methodology. In particular, we note:

664.1 NRAs are expected to implement the new guidelines by 2016;[367]

664.2 Sweden is in the process of considering the new EC guidelines and will implement changes in 2016;

664.3 Denmark does not have any reusable assets as they bury cables directly in the ground, so it would not change its methodology; and

664.4 Switzerland is also in the process of changing its asset valuation methodology. In July 2014, Switzerland changed its rules to an infrastructure renewals accounts methodology. The regulator in Switzerland indicated that they have no practical experience of this approach yet and are in the process of planning and implementing the changes.

665. However, we consider that ORC is the predominant methodology currently in use and has been tried and tested, and benefitted from repeated interactions over time.

666. Submissions also referred to countries that do not use TSLRIC models. We do not consider these are relevant as we are required to use a TSLRIC model.[368]

667. Table 9 below provides a summary of countries we have considered and their approach to valuing reusable assets.

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364 Competition Economists Group "Non-replicable assets and forward-looking cost" August 2014, paragraph [7].

365 We looked at the regulatory authority notification to the European Commission to enable us to understand the methodology used to set regulated prices between 2012 and today. We also had direct correspondence with the regulators in Sweden, Denmark and Switzerland.

366 The approach followed in Spain is unclear and was criticised by the EC.

367 As confirmed by the regulator in Sweden.

368 Wall Communications Inc, (2 October 2012) "A Study of Wholesale Costing Methodologies in Selected Countries" at page 56. This report surveyed costing methodologies in Australia, France, Germany, Sweden, the United Kingdom and the United States. It considered the three FAC methodologies as a Hybrid HCA/CCA Regulatory Asset Base (RAB) model for Australia and the UK, and CCA for France and indicated that these models are not TSLRIC models.

Table 9: Other countries approach to valuing reusable assets

	Belgium[369]	Denmark	Sweden[370]	Switzerland[371]	Turkey	Italy[372]	Germany	Czech[373]	Cyprus[374]
Does it consider asset re-use?	No but the approach in Belgium is very specific because a bottom-up model is developed and this model reconstructs the history of the deployment of the network in Belgium. So it is not a pure bottom-up LRIC model	No	No	Yes, but in the process to implement this. No practical experience yet.	No (if the model developed in 2008 is still in use)	No	To our knowledge, no but the documentation is very old so we are not 100% sure[375]. Recent European Commission decision on Germany do not contradict this.	No	Based on information available, Cyprus is using a BU-LRIC model but details are not available. In 2013, the European Commission wrote: *" Currently, civil engineering is valued at current costs in the cost model which according to OCECPR lead to relatively high cost-oriented access when compared to retail prices."*
Cost methodology for reusable assets	-	-	-	UK renewal accounts approach	-	-	-	-	
Whether historic costs or current costs	-	-	-	See above	-	-	-	-	
Since when	-	-	-	1st July 2014	-	-	-	-	
Do these models have shorter asset lives	-	-	-	No information	-	-	-	-	

369 Report for BIPT Consultation document for the draft NGN/NGA models 23 December 2011.
370 European Commission, Case SE/2011/1205.
371 Federal Communications Commission, Switzerland.
372 European Commission Case IT/2013/1489-1490.
373 European Commission Case CZ/2013/1451.
374 European Commission Case CY/2012/1396.
375 An Analytical Cost Model for the Local Network - Consultative Document - Prepared by WIK for the Regulatory Authority for Telecommunications and Posts: 4 March 1998.

We have not selected anchor pricing

668. Network Strategies, on behalf of Spark and Vodafone, proposed Ofcom's anchor pricing methodology. They described the methodology as:[376]

> The price (and quality) of existing services are 'anchored' by the legacy technology, even if the services are provided over the new technology. This approach is intended to give the regulated firm incentives to invest in new technology only when providing services over the new technology would lower its overall costs, or would enable it to provide higher quality services for which consumers are willing to pay.

669. Network strategies argued that the anchor pricing methodology used by Ofcom indicates that an assumption of less than full replacement cost in asset valuation is appropriate in the context of a largely depreciated access network, and is consistent with dynamic efficiency.[377]

670. Frontier, on behalf of Spark, Vodafone and CallPlus, describes Ofcom's 'anchor pricing' methodology as a methodology that sets prices for copper services on the basis of the hypothetical operator continuing to operate the legacy network.[378]

671. Our understanding of the anchor pricing methodology is similar to Frontier's submission, but differs from Network Strategies' submission in that there is no MEA involved in applying the anchor pricing methodology. We consider that anchor pricing involves modelling the costs and asset values based on existing technology.[379]

We consider that anchor pricing is incompatible with our particular TSLRIC modelling exercise

672. We consider that the anchor pricing methodology is incompatible with our particular TSLRIC modelling exercise because we believe the forward-looking costs would incorporate efficient modern equivalent assets and not legacy assets. We explain this in more detail in Chapter 1. Such an approach also better fits with our approach to give weight to predictability which we also explain in Chapter 1.

673. As such, we consider that the anchor pricing methodology is not appropriate in our context.

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376 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p. 5.

377 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p. 5.

378 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 24, box 1.

379 Final determination- Verizon UK Limited V Office of Communication- 12 December 2013 http://www.competition-commission.org.uk/our-work/directory-of-all-inquiries/verizon-vodafone-appeal and Ofcom's business connectivity market review in March 2013 http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/summary.

We have not selected depreciated optimised replacement cost

674. In 2002, we defined DORC as optimised replacement costs written down for past depreciation.[380]

675. Frontier, on behalf of Spark, CallPlus and Vodafone, submitted that we should adopt DORC for long-lived assets, such as ducts, that can be reused. Frontier argued that reusable assets should be valued differently from other assets because:[381]

- It provides a better reflection of the expenditures made by the access provider, and so provides some protection against the access provider being compensated for incurring costs which they in fact never did, and never will, incur.
- It facilitates the rolling in of future capital expenditures at their forecast efficient levels, which will be the actual costs so long as those costs are shown to be prudent.

676. Frontier proposed the following DORC approach:[382]

- First assessing the total expected life of an asset.
- Next, assess the expected remaining life of the asset. This could be done using information obtained either from Chorus' financial records, or through an independent engineering study of the state of existing assets.
- Then, take the ratio between the expected remaining life of the asset and the expected total life of the asset.
- Finally, multiply the ORC valuation by the ratio obtained in the previous step.

677. This approach was supported by Spark and Internet NZ.[383]

678. Internet NZ argued that the Act is sufficiently broad and flexible to enable Frontier's proposed approach,[384] and Spark argued that Frontier's proposed approach is forward-looking.[385]

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380 Commerce Commission "Application of a TSLRIC Pricing Methodology - Discussion Paper" 2 July 2002, paragraph [188].

381 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, section 4.1 p 35.

382 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 36.

383 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraphs [23]-[28], and InternetNZ, Consumer NZ and TUANZ "Cross submission by InternetNZ, Consumer NZ and TUANZ in relation to UCLL FPP Issues and Process Paper" 28 February 2014, paragraph [46].

384 InternetNZ, Consumer NZ and TUANZ "Cross submission by InternetNZ, Consumer NZ and TUANZ in relation to UCLL FPP Issues and Process Paper" 28 February 2014, paragraph [46].

385 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraph [25].

679. We do not disagree. While we note that DORC relies on historic information and therefore reflects historic recovery of costs. Basing a valuation on an assets current age is not necessarily backward-looking, as DORC can provide a proxy for the current market price of an old asset where economic depreciation is used. However, this would assume the hypothetical efficient operator is re-using or purchasing, rather than building, the network.

680. We discuss in Chapter 1 that we consider a TSLRIC-based price should promote efficient investment and that such an approach emphasises forward-looking costs that reflect the efficient costs of building an equivalent service today. Hence a move to a DORC methodology moves us away from modelling the efficient cost of building the network.

681. We consider our approach to modelling a hypothetical efficient operator is better placed as an operator who has to build its assets which is more aligned to how TSLRIC is implemented currently. Although we accept DORC is open to us, it does not align with our hypothetical efficient operator approach and so overall we do not prefer it.

We consider that the EC approach is not compatible with New Zealand circumstances

682. We consider that the primary driver of a change in asset valuation methodology in the EC's new Guidelines reflects issues in Europe which differ to New Zealand. Differences include:

682.1 unlike Europe, there is no mandated duct access in New Zealand; and

682.2 in New Zealand, UFB investment is assured by contract and subsidies received by UFB investors, while in Europe investment in next generation networks is incentivised, not assured.

683. In the July 2014 regulatory framework and modelling approach paper, one of the reasons we rejected a dual asset valuation methodology was that there is no mandated access to ducts in New Zealand.[386] WIK responded:[387]

> The issue of mandating access to ducts addresses whether third party operators have access to the legacy infrastructure or not. Both concepts are only related through the impact which mandated access might have on the amount of re-usable assets which can be used in deploying the new MEA network. Not mandating access to ducts does by no means conceptually exclude the re-valuation of re-usable assets.

684. We agree with WIK to the extent that this approach is open to us. However, we consider that our views on the differences between the ECs recommended approach and New Zealand remain.

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386 Commerce Commission, "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [146].

387 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [19].

We have not selected dual asset valuation

685. The new EC Guidelines have adopted a dual asset valuation methodology, recommending ORC for non-reusable assets and a different asset valuation methodology for reusable and unlikely to be replicated civil engineering assets such as ducts and trenches.[388] The asset valuation methodology for reusable assets was described by WIK as follows:[389]

> "… when building the BU LRIC+ model, NRAs should not assume the construction of an entirely new civil infrastructure network for deploying an NGA network". In order to avoid over-recovery of costs, the methodology outlined in the recommendation foresees the determination of a Regulatory Asset Base (RAB) for reusable legacy civil engineering assets (ducts, poles, etc.) through the indexation method:
>
> - this method relies on historic data on expenditure for the reusable assets, accumulated depreciation and asset disposal as well as the indexation through an appropriate price index;
>
> - reusable legacy civil engineering assets still in use but fully depreciated are not to be included in the RAB.
>
> Thus, the Regulatory Asset Base (RAB) consists of the historic costs of the reusable civil engineering assets not completely depreciated, net of the accumulated depreciation at the time of calculation and indexed by an appropriate price index. The indexation ensures that historic costs are "updated" to reflect today's value of the investment, i.e. prices that would have to be paid today for these assets.

686. Frontier submitted that the ECs Guidelines suggest an approach that is essentially a DORC methodology, involving indexing forward the historic cost of assets, and then subtracting from this value accumulated depreciation.[390]

687. WIK argued, on behalf of Vodafone and Spark, that an efficient operator would not replicate the existing ducts and pole assets in Chorus' network and as such, to prevent over-recovery, argued that we should adopt the ECs dual asset valuation methodology, and that this was a proper implementation of TSLRIC in circumstances of migration from copper.[391]

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388 European Commission "Commission recommendation of 11.9.2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment" 11 September 2013.

389 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [16].

390 Frontier Economics "Determining a TSLRIC price for Chorus' UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 36.

391 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraphs [3], [13], [19] and [59]. The link to migration WIK is trying to draw is not clear from its submission.

688. CallPlus agreed with WIKs recommended "brownfield approach".[392] Similarly, Vodafone agreed with WIK that we should consider the dual asset valuation methodology as a starting point.[393]

We consider that dual asset valuation is not compatible with our hypothetical efficient operator approach

689. WIK proposed the ECs recommendation, where compensation for reusable assets should be valued based on indexed historic costs taking into account accumulated depreciation.[394] In our view, this is not consistent with our forward-looking approach.

690. Professor Vogelsang viewed the ECs dual asset valuation methodology as an "inflation-adjusted" historic cost methodology rather than a forward-looking methodology. Professor Vogelsang notes:[395]

> While, in my opinion, the switch from replacement cost to inflation-adjusted historic cost in the case of non-replicable assets can be viewed as a break with the classical TSLRIC approach and can therefore be seen as interfering with predictability.

691. TERA, advised us that, in its view, the ECs recommended dual asset valuation methodology could be viewed to be closer to current costs than historic costs.

692. We consider this to be a variant of the DORC methodology discussed in the previous section. Here we distinguish between two types of assets, replicable and non-replicable assets. Here the potential impacts of failing to promote efficient, alternative, investment are likely to be small given these are assets that are unlikely to be replicated. However, we do not believe moving to such an approach will aid predictability which may bring with it longer-term costs to end-users through harming investment incentives more broadly.

693. On balance, we do not propose to adopt a dual asset valuation methodology.

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392 CallPlus "Cross-submission on the Commerce Commission's Consultation Paper: Proposed view on regulatory framework and modelling approach for UBA & UCLL services" 20 August 2014, paragraph [12b].

393 Vodafone New Zealand Limited "Comments on process and issues paper for the unbundled copper local loop (UCLL) final pricing principle" 14 February 2014, paragraph [D4.6]. See also Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [E3.8].

394 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [14].

395 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 8 September 2014, paragraph [17]. Also see Wall Communications Inc "A Study of Wholesale Costing Methodologies in Selected Countries" (2 October 2012), p. 20.

We consider that we are not required to quantify the impact of our decision

694. CallPlus submitted that we need to fully analyse different approaches to understand the effect.[396] Spark also submitted that we need to quantify the effect of the decision before we make the decision.[397]

695. We agree it would be open to us to do so, but we do not think it is required, and we were not persuaded to do so for the reasons documented above in this attachment. We also note that is also difficult to:

695.1 draw the line between reusable and non-reusable assets; and

695.2 price reusable assets. For example, we are unsure how we would price fully depreciated assets.

396 CallPlus "Cross-submission on the Commerce Commission's Consultation Paper: Proposed view on regulatory framework and modelling approach for UBA & UCLL services" 20 August 2014, paragraphs [4], [12(b)] and [16].

397 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach – Submission Commerce Commission " 6 August 2014, paragraphs [8], [41], [42], [59] and [103].

Attachment F: Asymmetric risk

Purpose

696. This attachment outlines how we have considered asymmetric risks in our model.

Our draft decisions

697. Our draft decisions are that:

697.1 An ex ante allowance for specific prudent costs is appropriate for catastrophic risks, as is recognising the risks of asset stranding due to technological change by shortening asset lives; and

697.2 An ex ante allowance is not appropriate for risks of asset stranding due to competitive developments and asset stranding due to re-optimisation.

Relevance of asymmetric risks to TSLRIC

698. A firm faces asymmetric risk when its distribution of returns is truncated at the one extreme, without an offsetting truncation at the other end. There are two main forms of asymmetric risk:[398]

698.1 Risks that arise through infrequent events that could produce large losses, such as natural disasters and terrorist threats; and

698.2 Risks that derive from events such as the threat of competitive entry or expansion.

699. We have previously considered asymmetric risks in the context of regulating services under Part 4 of the Commerce Act 1986. Such risks will exist within the telecommunications sector. While a number of the relevant issues we need to consider will be the same in the Part 4 and telecommunications contexts, we note that:

699.1 asset valuation under TSLRIC is based on optimised replacement costs for a hypothetical efficient operator. This is quite different to regulation under Part 4 where actual investment is recorded in the RAB and a return of and on capital preserved which significantly mitigates asset stranding risk; and

699.2 our expectations are that the rate of technological change in telecommunications is greater than for services regulated under Part 4, which carries with it a greater risk of investments becoming obsolete.

[398] See Commerce Commission "Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons paper" (22 December 2010), paragraph [H12.4].

700. Consequently, we consider asymmetric risks are relevant to our TSLRIC considerations. In this respect CEG, on behalf of Chorus, have submitted that the "hypothetical service provider" faces the following potential asymmetric risks to cash flows:[399]

700.1 Demand for services within a regulatory period may be more likely to be lower than the mid-point forecast (than higher), because of low frequency but high impact events (such as earthquakes) ie, catastrophic risks.

700.2 Costs of providing services within a regulatory period may be more likely to be higher than forecast due to: (1) low frequency but high impact events (such as earthquakes); or (2) the asymmetric relationship between demand and costs.[400]

700.3 Technological and competitive developments in the broadband sector may result in the future stranding of the provider's assets. This can occur if the provider simply cannot recover its costs from future customers even if the regulator removes any restrictions on pricing.

700.4 Future regulatory decisions may also strand the value of the service provider's assets.[401] Similarly, future Government policy may have the same effect.

We have considered each of the asymmetric risks identified by CEG

701. We categorised the asymmetric risks identified by CEG as follows:

701.1 Ex post allowance for asymmetric risks, which we have not considered further;

701.2 Ex ante allowance for the following risks:

701.2.1 Catastrophic risks;

701.2.2 Asset stranding due to technological change;

701.2.3 Asset stranding due to competitive developments; and

701.2.4 Asset stranding due to re-optimisation.

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399 CEG, "Response to Commerce Commission UCLL/UBA WACC consultation paper" (March 2014), paragraph [325].

400 For example, CEG notes that if demand for UBA services grows then the provider may incur additional costs in installing and maintaining additional electronic equipment in exchanges. However, if demand for UBA services falls, the provider may be unable to make equivalent cost savings (given that much of the costs of existing capacity is sunk). This makes higher demand less profitable than the losses associated with lower demand, creating a source of asymmetry.

401 For example, CEG states that the regulator may decide to effectively write down the value of the provider's assets based on an estimated reduction in the costs of modern equivalent assets – even if the regulator's previous pricing had not anticipated and allowed compensation for the depreciation in the value of the provider's assets.

702. We outline our approach to each of these asymmetric risks below.

We have provisionally decided that an ex ante allowance for specific expenditure that mitigates against catastrophic risk is appropriate

703. We have provisionally decided that an ex ante allowance for catastrophic risk is appropriate given that TSLRIC pricing is not compatible with ex post compensation. We consider that an appropriate approach is to recognise an allowance for catastrophic risk as a relevant cost.

704. We consider that an allowance to compensate for catastrophic risk is a relevant cost because:

704.1 our price decisions should reflect the efficient costs we would expect the hypothetical operator to incur; and

704.2 the hypothetical operator may prudently insure against catastrophic risk.

705. This type of allowance is consistent with our reasoning when we considered catastrophic risk under our Orion customised price-quality path (CPP) determination ie, an allowance to compensate for catastrophic risk is a prudent and efficient cost.[402]

706. Under the IMs, we did not make any explicit adjustments to the WACC for catastrophic risk.[403] Instead, we indicated that it may be appropriate to deal with asymmetric risks through other forms of adjustment or mechanisms.[404]

707. We do not consider there is reason to depart from this view. As such, we have decided that an adjustment to the WACC to reflect asymmetric risks is not appropriate. The March 2014 submission from CEG supports this view.[405]

708. We have included compensation for catastrophic risk in our model as follows:

708.1 We have included costs for seismic bracing and backup generators; and

708.2 We consider it is appropriate to use Chorus' insurance costs, which provide cover for catastrophic events.

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402 *Setting the customised price-quality path for Orion New Zealand Limited* [2013] NZCC 21, Attachment B and C.

403 "The IMs do not make any adjustments to the cost of capital for asymmetric risk. However, the Commission does consider that it may be appropriate to deal with asymmetric risks through some other forms of adjustment or mechanisms, such as adjustments to regulatory cash flows with the use of flexible depreciation (e.g. a front-loaded depreciation profile in the event that asset standing becomes apparent)." Commerce Commission "Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons paper" (22 December 2010), paragraph [H12.1].

404 For example, adjustments to regulatory cash flows with the use of flexible depreciation (eg, a front-loaded depreciation profile if asset standing becomes apparent).

405 CEG "Response to Commerce Commission UCLL/UBA WACC consultation paper" (March 2014), paragraphs [337]-[338].

709. Although the hypothetical operator may not be insured for demand risk, we consider that demand risk is diversifiable. This is consistent with the our view in the Orion CPP decision that:[406]

> investor diversification minimises the impact of demand risk. To well-diversified investors, only the demand risks that affect all investments matter. The demand risks specific to one investment can be expected to be offset by those of other investments, and unexpected positive and negative shocks may be experienced by individual businesses over time. Such shocks are therefore of little consequence to a well diversified investor

710. As such, we have decided that no additional compensation is required for catastrophic risk beyond that outlined in paragraph 708 above.

We have provisionally decided that an ex ante allowance for asset stranding due to technological change is appropriate

711. On balance, we have provisionally decided that an ex ante allowance for compensation for the asymmetric components of asset stranding risk due to technological change is appropriate.

712. CEG consider that technological change in the broadband sector may result in future stranding of the provider's assets.[407]

713. Spark have noted they believe that:[408]

> …the asymmetric risks of asset stranding for Chorus will be correctly compensated for both as part of the Commission's WACC estimation process (systematic risk component) and the tilted annuity calculations (non-systematic risk component). No additional adjustment is warranted for such asymmetric risks by the selection of a WACC percentile uplift.

714. We agree with Spark that certain elements of asymmetric asset stranding risk which are systematic will be incorporated into our WACC estimate.[409] There may also be non-systematic elements which may require compensation either through the depreciation profile, or otherwise. Although Spark's cross-submission was not received as part of the FPP process, we consider that the points raised are directly relevant, and so we have considered them in making this determination.

715. Furthermore, as we discuss in our Attachment A, we have also considered the implication of our hypothetical efficient operator as a replacement network for copper and fibre networks. The risk of the main cost of trench and duct being stranded in this context may be low.

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406 *Orion New Zealand Limited Customised Price-Quality Path Determination [2013] NZCC 21*, at [C5.1].

407 CEG "Response to Commerce Commission UCLL/UBA WACC consultation paper" March 2014, p. 81.

408 Spark New Zealand, "Proposed amendment to the WACC percentile for electric lines services and gas pipeline services: response to Chorus submission: cross-submission", 12 September 2014, paragraph [37].

409 Within the WACC estimated as part of this FPP, our asset beta will capture the systematic component of risk which may include elements of asset stranding and other asymmetric events. We also note that the TAMRP will incorporate investors required returns across the market portfolio which may include elements of catastrophic risk.

716. Nonetheless, we recognise the greater level of technological change in the telecommunications sector and, on balance, agree with Chorus that there may be some asymmetric risk of asset stranding which requires *ex ante* compensation. In particular, as we noted in paragraph 699.1, investment in a TSLRIC context by Chorus or a hypothetical efficient operator is not afforded the same protection as offered under the Part 4 Regulatory Asset Base model.

717. We considered the following approaches to compensate for the asymmetric risks of asset stranding:

717.1 **Option value**: The value of the ability to defer investment. Professor Vogelsang advised that real options are currently not included in TSLRIC calculations anywhere;[410]

717.2 **Flexible depreciation**: A front loaded depreciation profile could be used to address asymmetric risks from asset stranding. Front loading depreciation keeps the lifetime revenues NPV neutral but changes the time-profile of cost recovery to reduce the risk; or

717.3 **Adopt asset lives that recognise the risk of asset stranding**: Our approach in the TSO was to revise the expected economic life of the asset on an annual basis. Further, Plum consultants, in their research on fibre migration, noted that asset stranding risk could be addressed in asset lives.[411]

718. Our preferred approach is to adopt asset lives that recognise the risk of asset stranding as this is the simplest and most practical method of providing compensation.

719. Chorus' 2014 Financial Statements note that:[412]

> The determination of the appropriate useful life for a particular asset requires management to make judgements about, amongst other factors, the expected period of service potential of the asset, the likelihood of the asset becoming obsolete as a result of technological advances, the likelihood of Chorus ceasing to use the asset in its business operations and the effect of government regulation.

410 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 8 September 2014, paragraph [61].

411 Plum Consulting "Costing methodology and the transition to next generation access" (March 2011), p. 43.

412 Chorus, "Financial Statements for the year ended 30 June 2014" (August 2014), at p. 10.

720. We have decided to use Chorus' asset lives and, as noted above, these incorporate the likelihood of the assets becoming obsolete as a result of technological advances. The only exception to this is for MDF/ODF and submarine links, where TERA has used international benchmarks because the asset lives provided by Chorus seemed out of line with what has been observed in other jurisdictions, or were not provided.[413] We are satisfied that the asset lives incorporated into the model already adequately compensate our hypothetical efficient operator for the asymmetric risks associated with asset stranding.

721. Our approach to setting asset lives is discussed further in Attachment G.

We decided that an additional separate ex ante allowance for asset stranding due to competitive developments is not appropriate

722. We decided that an additional ex ante allowance to compensate for potential asset stranding due to competitive developments is not appropriate.

723. As indicated above, CEG, on behalf of Chorus, submitted that the hypothetical service provider faces asymmetric risks to cash flows as a result of competitive developments in the broadband sector, and this may result in future asset stranding.[414]

724. In principle we agree that new entry could reduce demand and leave assets stranded. However, we do not consider that it is appropriate to provide an additional allowance for the potential loss of scale due to competition. In this respect technological change and the risk of asset stranding through competitive developments cannot be easily separated. It is primarily competition which promotes the use of new, better technology that may strand assets in a competitive market.

725. We have already provided an additional allowance for asset stranding risk through asset life assumptions.

We decided that an ex ante allowance for asset stranding due to future regulatory decisions is not appropriate

726. We decided that an ex ante allowance for asset stranding due to future regulatory decisions is not appropriate.

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413 Indicators of the likely significance of asset stranding risk is the irreversibility of the investment, the significance of the investment and the length of asset lives.

414 CEG "Response to Commerce Commission UCLL/UBA WACC consultation paper", March 2014, paragraph [325].

727. CEG, on behalf of Chorus, argued that the regulator may decide to effectively write down the value of the provider's assets based on an estimated reduction in the costs of modern equivalent assets even if the regulator's previous pricing had not anticipated and allowed compensation for the depreciation in the value of the provider's assets.[415]

728. In our view, CEG's argument relates to actual costs rather than the hypothetical efficient operators costs. We also do not consider it is appropriate to provide an allowance for future regulatory decisions that may strand assets because a TSLRIC model explicitly includes expected asset price trends. Such windfall gains may occur in either direction and consequently we have no evidence of any material asymmetry. We would also be concerned about potential double-counting where any write down in asset value reflects the introduction of new technology.

729. As outlined at paragraph 719, we note that Chorus has considered the effect of government regulation in determining its asset lives. Although we have used Chorus' asset lives as our starting point, TERA has tested their reasonableness and used international benchmarks where the asset lives provided by Chorus seemed out of line with what has been observed in other jurisdictions, most notably within the life of DSLAMs.

730. We have also considered the submissions on any asymmetric risk arising from demand, cost, and government policy. No evidence has been provided that shows such risk is material and warrants any additional compensation above that provided for asset stranding. We also note that our hypothetical efficient operator is a replacement for the current copper and fibre networks.[416]

[415] CEG "Response to Commerce Commission UCLL/UBA WACC consultation paper", March 2014, paragraph [325].

[416] This is further discussed in Attachment A.

Attachment G: Setting asset lives

Purpose

731. This attachment sets out our approach to determining the asset lives used in our model.

732. We have set asset lives to depreciate the hypothetical efficient operator's assets over their economic lives. Asset lives are also relevant when taking into account asset stranding due to technological change, as discussed in Attachment F.

733. Using asset lives that understate the economic lives for assets such as civil engineering assets (ie, ducts and trenches) would result in the hypothetical efficient operator being over-compensated, as we are modelling the deployment of new assets rather than re-using existing assets. Ingo Vogelsang has also noted that, when using new assets (rather than re-using assets), it is important that the assumed asset lives are sufficiently long.[417]

734. Conversely, using asset lives that overstate the economic lives would result in the hypothetical efficient operator being under-compensated.

We consider the asset lives provided by Chorus are an appropriate starting point

735. We consider the accounting asset lives provided by Chorus are an appropriate starting point. We have used these as a proxy for the economic lives of the assets in our model. Chorus provided a list of asset categories and its estimation of the corresponding lives, as required by our section 98 notice. TERA has allocated all of the assets in the model into one of these categories and used the corresponding lives as the starting point.

We then adjusted Chorus' asset lives using international benchmarks

736. TERA then cross-checked these asset lives against TSLRIC models overseas. TERA selected international benchmarks where the asset lives provided by Chorus seemed out of line with what has been observed in other jurisdictions, or if no data was provided.

737. A list of the asset categories and lives used in the model, as well as TERA's reasons for using international benchmarks in some circumstances, can be found in TERA's Model Specification paper at section 8.4.

738. Although we did not specifically seek views on this topic, we received a number of submissions in response to our July 2014 regulatory framework and modelling approach paper.

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417 Ingo Vogelsang "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" 25 November 2014, paragraph [23].

739. Network Strategies, on behalf of Vodafone and Telecom, noted that the risk of over-compensating Chorus, to a certain extent, can be mitigated by assuming very long lives for the assets.[418] We agree that the risk of over-compensation can be mitigated in this way, but this should be balanced against the risk of under-compensating Chorus.

740. Network Strategies also asserted that cables are often assumed to have a lifetime of 40 years in regulatory modelling.[419] However, we are not aware of any models that use such a long lifetime for cables, and Network Strategies do not provide evidence to support this assertion.

741. Analysys Mason, on behalf of Chorus, noted that in order for an investor to have a reasonable expectation of cost recovery, the asset lives will need to take into account the possibility of future optimisation (or changes in MEA) stranding these assets.[420] We discuss asset stranding risk in Attachment F.

742. Following consideration of submissions and advice from TERA, we consider TERA's approach is a reasonable estimation of the economic lives of the relevant assets of the hypothetical efficient operator for the purpose of TSLRIC modelling.

[418] Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, p. 15.

[419] Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, p. 31.

[420] Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA", 6 August 2014, p. 15.

Attachment H: Price trends

Purpose

743. This attachment explains how we have forecast price trends for active assets, passive assets, and opex, as well as how we have converted foreign currency to New Zealand dollars.

744. We are required to form a view on how costs might change over the regulatory period. We do this by forecasting price trends. Price trends in our TSLRIC model are used to forecasts costs, and applied with the tilted annuity depreciation.

Our draft decisions

745. We have decided to forecast price trends for:

745.1 active assets using international benchmarks;

745.2 passive assets using a cost escalation approach using the CPI as the default; and

745.3 labour related opex using a cost escalation approach using the LCI.

746. We have decided not to forecast price trends for non-labour related opex, and have treated it as nominally constant over the regulatory period. We expect that efficiencies are likely to offset general inflation.

747. We have decided to convert foreign currency to New Zealand dollars using purchasing power parity (PPP) rates. We have used a constant rate for PPP over the regulatory period.

We consider that price trends should include raw material costs and productivity improvements

748. Chorus submitted that forecasts need to extend beyond the regulatory period to avoid price spikes.[421]

> If changes in the MEA are left to the period in which the MEA is expected to change, then prices may need to jump sharply in order to account for the expected change in the MEA.

[421] Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [139].

749. In response to this, Network Strategies submitted that:[422]

> The cost trends may be due to changes in the costs of the raw materials, or may be due to productivity improvements or technological developments. While Chorus discusses technological developments only in terms of changes in MEA, the Commission should note that such developments may encompass less radical advancements as well. Asset cost trends should encompass all these factors, and the tilt should be defined accordingly.

750. We agree with Network Strategies that price trends should not be limited to the technical development of changes in the MEA, but should also include changes in raw material costs and productivity improvements.

We have considered different approaches to forecasting price trends

751. We have considered different approaches to forecasting price trends in our TSLRIC model, including:

751.1 using independent forecasts or relevant indices to estimate price trends (the cost escalation approach);

751.2 benchmarking forecasts used in TSLRIC models in other jurisdictions (the international benchmark approach); and

751.3 using historical trends to predict future trends (the historical trends approach).

752. We discuss each of these approaches below.

[422] Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, pp. 37-38.

The cost escalation approach

753. The cost escalation approach involves using independent forecasts or relevant indices to estimate the price trends of network elements. Chorus proposed the following cost escalation approach:[423]

> 1 Determine whether or not there are reliable, independent and verifiable forecasts for the final network elements within the MEA network over the regulatory period. If these exist they should be used as the input price trends for these network elements. If not;
>
> 2 Develop an engineering assessment of the raw material inputs into the various network elements. This would include a breakdown of the cost of building the network elements (for example, type of labour (construction, specialist), cable, steel, concrete);
>
> 3 Source predictions of future prices either in the form of future prices or expert forecasts. For example, future prices and forecasts for copper can be used to inform the forecasts for the value of copper cable. Where futures are available and sufficiently liquid, we propose they be used in favour of forecasts on the basis that these represent the best forecast of prices by informed market participants; and
>
> 4 Calculate a weighted escalation factor or input price trend using the weights for the raw materials determined in the engineering assessment and the future prices and forecast for the raw materials.

754. Essentially, Chorus argued that where a single relevant index for a network element does not exist, we should use a weighted set of indices to estimate the price trend for the network element. For example, if the price of installing copper cables comprises of 50% wage costs and 50% copper price, we should use independent forecasts of the LCI and the copper index to estimate the copper cable price trends for our model.

[423] Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [134.1]-[134.4].

755. Network Strategies, on behalf of Vodafone and Spark, submitted that Chorus' proposed methodology would entail a number of practical difficulties, for example:[424]

755.1 it would require the identification of all network elements and reasonable forecasts;

755.2 some forecasts may be problematic and have widely differing views, such as copper prices;

755.3 the approach requires detailed assumptions of the weightings of various components; and

755.4 the approach requires additional assumptions regarding the production function.

756. Network Strategies also raised concerns about the uncertainty and risk of error associated with this approach.[425] Vodafone agreed with Network Strategies, noting that Chorus' proposed approach would not deliver an improved outcome.[426]

757. We support using the cost escalation approach, although agree that there are some difficulties with it. As such, we have decided to use this approach only where independent and reliable data is available, and price trends are dependent on local circumstances - that is, where an international benchmark approach would not be appropriate.

758. We consider that this is a predictable approach as it is forward-looking, and is consistent with our approach in setting the default price-quality path (DPP) under Part 4 of the Commerce Act.

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424 Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, pp. 30-31.

425 Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, p. 31.

426 Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [F1.3].

759. NZIER provided independent forecasts of relevant indices. The indices we requested are listed in Table 10 below.

Table 10: Independent forecasts from NZIER

Forecasts	**Use forecast to project this parameter(s) in the model**
CPI	Used for active assets which are not significantly based on wage
LCI	Mainly to derive trends for passive assets based on wages (for example, laying cables underground)
Aluminium sheeting	To derive the price trends for the following types of assets: cabinets (box), distribution point, racks, etc.
Fabricated steel	
Fibre optic cabling	To derive the price trends for fibre optic cables

The international benchmark approach

760. The international benchmark approach involves using the forecasts used in other TSLRIC models in other jurisdictions.

761. We consider that this approach is appropriate to forecast price trends for assets such as DSLAMs and switches, which a hypothetical efficient operator would be likely to purchase from worldwide suppliers. We consider that this information is available and reliable, and that this is a transparent approach.

762. However, a disadvantage to this approach is that it does not reflect local circumstances. As such, we have not used this approach for passive assets, such as trenches, the costs of which have a greater dependency on local circumstances.

The historical trends approach

763. The historical trends approach involves extrapolating historical data to predict future trends.

764. Advantages of the historical trends approach include:

764.1 a longer period of observations may be available to consider how costs have evolved over the last 10-20 years; and

764.2 it is useful if no other data is available.

765. A disadvantage of the historical trends approach is that technology can change significantly during the historical period under consideration making it inappropriate as a basis for making future forecasts.

766. Accordingly, we have only used the historical trends approach as a cross check.

We used a combination of the cost escalation and the international benchmark approaches

767. We consider that it is pragmatic to use a combination of the cost escalation and the international benchmark approaches, depending on the asset or opex category. Each approach is suitable for different circumstances. We selected the approach to use depending on:

767.1 the availability of independent and reliable data; and

767.2 whether the price trend is dependent on local circumstances.

Price trends for active and passive assets

We forecast price trends for active assets using the international benchmark approach

768. We instructed TERA to use international benchmarking to forecast price trends for active equipment because Chorus has provided us with insufficient data on active assets. We instructed TERA to use relevant forecasts from NZIER as a cross check.

We forecast price trends for passive assets using the cost escalation approach

769. We instructed TERA to use the cost escalation approach to forecast price trends for passive equipment, using the CPI as the default.

770. We also commissioned Beca to provide independent forecasts for duct and trench price trends. This is because duct and trench costs are highly influenced by local circumstances. We felt that it was appropriate to engage a local company to generate forecasts that accurately reflect New Zealand specific circumstances, such as post-earthquake Christchurch.

771. We decided to use this approach because passive equipment costs are influenced by local circumstances, so international benchmarks are less appropriate.

Price trends for opex

772. Chorus submitted that opex should also be forecast using its cost escalation methodology, as described above at paragraph 753.[427]

[427] Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraphs [122]-[123].

773. Network Strategies submitted that their preferred approach was to specify opex for a base year, and then apply a trend expressed as an annual percentage change in opex for the specified network element. Network Strategies preferred this to Chorus' approach, which it criticised for requiring the disaggregation of network elements into multiple components, resulting in greater uncertainty and risk of bias.[428] Vodafone agreed with Network Strategies.[429]

774. We consider that both Chorus' and Network Strategies' approaches are open to us, and consider that the outcome of each is likely to be similar.

We divided opex into labour related and non-labour related opex

775. TERA divided opex into labour related opex and non-labour related opex, with each being treated differently. Our rationale for how we have decided to treat each is outlined below.

We forecast price trends for labour related opex using the cost escalation approach

776. We instructed TERA to use the cost escalation approach to forecast price trends for labour related opex.

777. We decided to use only the LCI, rather than disaggregate opex into different components. That is, we consider that the weighting for the labour costs would be considerably larger than the weighting of any other components. The other components would therefore have a negligible effect on the price trend. Forecasts for the other components of labour related opex would also be very difficult to determine.

We have not forecast price trends for non-labour related opex

778. We decided not to forecast price trends for non-labour related opex. We expect that efficiencies are likely to offset general inflation. As such, we instructed TERA to treat non-labour related opex as nominally constant over the regulatory period.

We have used purchasing power parity to convert foreign currency to New Zealand dollars

779. We have used PPP rates to convert foreign currency to New Zealand dollars. We have used a constant rate for PPP over the regulatory period.

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428 Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, p. 32.

429 Vodafone "Submission to the New Zealand Commerce Commission - Cross-submission on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 20 August 2014, paragraph [F1.4].

Attachment I: Depreciation

Purpose

780. This attachment outlines how we have treated depreciation in our model.

781. Most capital goods are used up in the process of producing output. Through physical deterioration and obsolescence, capital goods, with a few exceptions, eventually reach the end of their useful life. As assets deteriorate and are finally retired their productive capacity declines to zero. At the same time their market value declines.[430] This depreciation of value is a cost that needs to be recovered as part of a forward-looking cost-based price. Accordingly, depreciation needs to be reflected in the prices charged for the service(s) that use the capital goods.

782. Many of the costs incurred in providing the UCLL service are on fixed infrastructure assets or capital goods that are useful over many years. A forward-looking cost-based price assumes that these costs are recovered over a number of years. Depreciation determines the amount of an asset that the network operator can recover each year through the regulated access price.

783. There are two broad forms of depreciation – economic and accounting:

783.1 *economic-based depreciation* captures the change in factors that determine the value of an asset from one period to the next; whereas

783.2 *accounting-based depreciation* is focussed on allocating the value of an asset across time periods.

Economic-based depreciation

784. Economic depreciation incorporates the various factors that affect the value of assets. There are a wide range of factors that determine the economic value of an asset, including expected revenue, asset prices, technological change and demand.[431]

785. Estimating economic depreciation is information intensive and requires forecasts of how the various factors that affect the value of an asset are expected to change over a long time period. Due to the inherent shortcomings of forecasting over long periods, it is unclear whether economic depreciation provides a more accurate depreciation allowance than accounting-based approaches to depreciation.

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430 Charles R.Hulten and Frank C. Wykoff, (1996), "Issues in the measurement of economic depreciation: introductory remarks", *Economic Inquiry* 34, pp. 10–23.

431 Regulators in Belgium, The Netherlands and Norway apply forms of economic depreciation. Analysys Mason, "Report for BIPT: BIPT's NGN/NGA Model version v1.0 documentation for industry players" 23 December 2011; Analysys Mason, "Report for the Norwegian Post and Telecommunications Authority (NPT): Fixed Long Run Incremental Cost (LRIC), Model for Market 4 Response to operator consultation" 28 September 2012; Analysys Mason "Report for OPTA: Conceptual approach for the fixed and mobile BULRIC models", 20 April 2010; Analysys Mason, "Report for Ofcom: Study of approaches to fixed call origination and termination charge controls", 15 May 2012.

786. There is also a risk of creating a circular argument, as the calculation of economic depreciation depends on the expected development in revenue, which in turn depends on the calculated depreciation charge included in the regulated prices.

Accounting-based depreciation

Straight-line depreciation

787. Straight-line depreciation distributes an asset's value equally across the assumed life of the asset to produce an annualised depreciation charge.

788. The straight-line depreciation formula provides limited flexibility to take into account factors that are expected to affect asset values. For example, the regulator can modify the assumed lifetime of the asset.

789. Straight-line depreciation is often used in economic regulation, particularly outside telecommunications, because (relative to other forms of depreciation) it is well understood, transparent and simple to calculate.

Annuities

790. An annuity combines an allowance for depreciation with the return on capital.[432]

791. A standard annuity calculates the charge that recovers the asset's total purchase price and financing costs in annual sums that are constant over time.

792. If the price of the asset is expected to change over time, a tilted annuity would be more appropriate. A tilted annuity calculates an annuity charge that changes between years at the same rate as the expected change of the asset value. This results in declining annualisation charges if prices are expected to fall over time, or vice versa when prices are expected to rise. Because of this feature, the tilted annuity approach is an approximation to economic depreciation as annual charges are brought in line with the expected value of the asset at each time of its economic life. As with a standard annuity, the tilted annuity should still result in charges that, after discounting, recover the asset's purchase price and financing costs.

793. A variation of the tilted annuity is the adjusted tilted annuity, which, in addition to price changes, is capable of taking changes to demand into consideration. As is the case for price changes in the tilted annuity, only constant annual changes to demand can be considered (eg five percent demand increase per year).

[432] The return on capital is calculated by multiplying the value of assets by the cost of capital (ie the financial return investors require from an investment given its risk).

We consider that a tilted annuity methodology is most appropriate for our TSLRIC model

794. In the UCLL process and issues paper, we outlined our preliminary assessment that a tilted annuity approach should be used rather than straight-line or economic depreciation.[433] In that paper, we asked submitters whether an alternative depreciation approach to tilted annuity should be used and if so, why it would be preferable.

795. Submitters responded as follows:

795.1 Frontier Economics, for Vodafone, Telecom and CallPlus, submitted that a tilted annuity methodology should be used for depreciation, and that economic depreciation should not be used due to the complexities. In doing so, Frontier recommended against using straight-line depreciation given its tendency to front-load allowed revenues.[434]

795.2 Spark stated that economic depreciation would generally be preferred to the tilted annuity methodology in telecommunications cost models, but given that the economic depreciation methodology is difficult, a tilted annuity methodology may well provide an acceptable proxy for economic depreciation if all relevant factors are fully considered.[435]

795.3 Both Chorus and Analysys Mason (on behalf of Chorus) submitted that an adjusted tilted annuity (with an additional tilt for demand changes) and economic depreciation would both be superior to tilted annuity, given the possibility of a future migration to an alternative access technology. Chorus submitted that the adjusted tilted annuity may be an appropriate simplification to ensure the model results are delivered by December 2014.[436]

795.4 Vodafone argued that a standard or straight-line annuity should apply to reused assets, while a titled annuity methodology (using CPI adjustments) should apply to assets valued at ORC.[437]

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433 Commerce Commission “Process and issues paper for determining a TSLRIC price for Chorus' unbundled copper local loop service in accordance with the Final Pricing Principle” (6 December 2013), paragraphs [167]-[168].

434 Frontier Economics "Determining a TSLRIC price for Chorus’ UCLL service - A report prepared for Vodafone New Zealand, Telecom New Zealand and CallPlus" February 2014, p. 41.

435 Telecom "Submission on Process and issues paper for determining a TSLRIC UCLL price" 14 February 2014, paragraphs [166]-[168].

436 Chorus "Submission in response to the Commerce Commission’s Process and issues paper for determining a TSLRIC price for Chorus’ unbundled copper local loop service in accordance with the Final Pricing Principle" 14 February 2014, paragraphs [79] and [279]; and Analysys Mason "Report for Chorus - Response to Commission" 12 February 2014, p. 34.

437 Vodafone New Zealand Limited "Comments on process and issues paper for the unbundled copper local loop (UCLL) final pricing principle" 14 February 2014, recommendations 24 and 25, p. 28.

796. None of the submissions we received changed our view, and in our July 2014 regulatory framework and modelling approach paper we stated that our view was still that a titled annuity methodology is the most appropriate for our TSLRIC modelling exercise, because:

796.1 a tilted annuity methodology is the orthodox depreciation methodology used in electronic communications regulation, and we have previously adopted a tilted annuity methodology in the TSLRIC context. In our view this approach is therefore most consistent with our TSLRIC objective of predictability.

796.2 over the lifetime of the assets, a tilted annuity will result in a relatively constant rate of change in prices in a situation where a stable demand profile is modelled. This is expected to avoid windfall gains and losses being caused by changing network costs.

797. We also noted that:

797.1 While an economic depreciation methodology is considered to be the most robust methodology, it is the most complex to implement and the availability of the necessary information is limited.

797.2 The tilted annuity methodology is a good proxy for economic depreciation where the demand profile is stable. Given that we have adopted a stable demand profile, a tilted annuity methodology is likely to produce a similar result to an economic depreciation methodology.

797.3 Likewise, an adjusted tilted annuity methodology, as recommended by Chorus and Analysys Mason, is only superior to tilted annuity where demand is not stable.

798. In response to our July 2014 regulatory framework and modelling approach paper, we received a number of submissions:

798.1 Vodafone, Spark, and WIK-Consult, all supported a titled annuity approach, but submitted that we should include an adjustment factor for both expected price, and demand changes.[438]

798.2 Chorus maintained its position that an adjusted tilted annuity is superior to a tilted annuity. Chorus submitted that we: [439]

> […] should be very careful when setting the depreciation profile so that it does not backload recovery of cost in a way that will make it practically impossible to recover the efficient cost of the network.

798.3 Chorus also submitted that:[440]

> In order to achieve expected NPV neutrality over the regulatory period, the input price trends must, in total, reflect the expected change in the replacement cost of the assets over the regulatory period. There are two factors that need to be taken into account to ensure this outcome is achieved – the expected escalation in costs of the MEA being modelled and any effects of a change in the MEA.

798.4 Vodafone also commented that static demand is not required for proper application of the tilted annuity approach.[441]

798.5 Analysys Mason submitted that we "should adopt a depreciation method which allows for the declining demand for UCLL as a result of fixed-mobile substitution and (as a minimum) loss of customers to non-Chorus LFC's."[442] We have responded to this in our draft decisions on demand, outlined in Attachment A.

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438 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G8.1]; Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission " 6 August 2014, paragraph [142]; WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [59].

439 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraphs [126], [129]. We note that the model does not significantly backload cost recovery because the UCLL price increases by only 2.2% per annum.

440 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [128].

441 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G8.2].

442 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.18].

799. As we stated in our July 2014 regulatory framework and modelling approach paper, the adjusted tilted annuity is only superior to the tilted annuity when demand is not considered to be constant.

800. As our preliminary view is that as a constant demand should be modelled, there is consequently unlikely to be a difference between using a tilted annuity or an adjusted tilted annuity.

801. The proposed price trends and asset lifetimes used in the model have been chosen to achieve cost recovery and NPV neutrality over the regulatory period and, as a consequence, the adjusted tilted annuity results in charges that, after discounting, recover the asset's purchase price and financing costs.

802. As our MEA is a FTTH/FWA network, we consider the risk of technical obsolescence in the medium-term as very low and, therefore, not a reason for selecting one depreciation method over another.

803. The received submissions have not changed our view about calculating depreciation using the tilted annuity method.

Attachment J: Exclusion of certain capital costs

Purpose

804. We have considered whether the hypothetical efficient operator would incur all of the capital costs of building the hypothetical UCLL network, or whether we should deduct some capital costs for some parts of the network because the hypothetical efficient operator would not incur those costs itself. The hypothetical efficient operator could, as occurs in practice, require a payment to induce it to build part of the network (a "capital contribution") and/or require end-users to incur some of the costs, such as trenching and reinstatement costs.

Our approach to including or excluding capital costs of the hypothetical UCLL network

805. In Chapter 1, we noted that we may consider what occurs in the real world to inform our assessment of what decisions a hypothetical efficient operator would be likely to take. We assume that our hypothetical efficient operator is a rational, profit-maximising business. Accordingly, there may be circumstances in which decisions made by other rational, profit-maximising businesses in the real world provide an indicator as to the hypothetical efficient operator's likely response to the same issues.

806. We know that Chorus does receive capital contributions or have other people assist with the build of its network for network assets that Chorus does own. We consider it reasonable to assume that the hypothetical efficient operator would also seek and obtain some contributions and not incur the full capital costs of building the network it would own and operate.

807. The Act's definition of TSLRIC also requires us to model forward-looking costs. The contributions Chorus has received historically are not determinative of the contributions a hypothetical efficient operator would receive. We have used the capital contributions Chorus receives to check the modelling decisions we have made.

808. We have consequently deducted some capital costs from our full-UCLL network TSLRIC cost. We retain the opex associated with those assets because the hypothetical efficient operator still owns and maintains the full network.

809. There are some capital costs which a hypothetical efficient operator would not expect to recover in the standard price it receives for its services. This may be because the additional capital cost of extending its network to additional end-users would be so high that it would not expect to be able to charge and receive a price for the service that could recoup that cost. This occurs in practice where, for example, a subsidy is needed under the Government's RBI to extend the broadband capability of Chorus' network to more remote areas.

We use a TSO-derived boundary as a proxy for efficient capital expenditure

810. As set out in Attachment A, we have used the TSO network coverage as our starting point for where the hypothetical efficient operator would deploy its network. We then go on to consider whether or not the hypothetical efficient operator would connect premises in addition to the existing TSO coverage.

811. Our preliminary view is that premises beyond the TSO-derived boundary would only likely be connected where a capital contribution was provided by the end-user (with only opex being incurred by the hypothetical efficient operator) – as evidenced by the copper network's historical deployment.[443]

812. Accordingly, our approach is to exclude the capex of the network outside the TSO-derived boundary from the full network TSLRIC cost. We note that it is only the capital cost of the extension of plant outside the TSO-derived boundary that is deducted. The cost of capacity back to the node (within the TSO-derived boundary) and the operating cost of the plant outside the TSO-derived boundary remain in the full network TSLRIC cost.

813. The effect, as determined based our defined boundary, is to exclude capex related to approximately 6.4% of all the address points in the TSLRIC model.

814. We note that the 6.4% of address points relates to 47.5% of road network length, reinforcing our view that a hypothetical efficient operator would not deploy network in such areas without some form of contribution.

815. We have considered the capital contributions Chorus receives to test this approach.

816. When Chorus reticulates sub-divisions, the developer provides the trench (and reinstates it) as well as paying Chorus a 'per section' amount towards the development, planning, project supervision and the like.[444] Chorus receives assistance from developers of new 'standard' sub-divisions, where more than four lots are created. According to Chorus' subdivision reticulation policy, outside Chorus UFB areas and where minimal network augmentation is required:

    816.1 The developer provides Chorus with all trenching and manhole work and any reinstatement

    816.2 The developer also pays Chorus the 'standard charge' of $1600 plus GST, to cover design planning work, supply of materials, supervision of cable-laying, feeder augmentation, updating records and project management and administration costs. Chorus retains ownership of all network infrastructures.

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443 We establish a TSO-derived boundary based on the area defined in the TSLRIC model used for TSO. Each segment within the road network model was tagged with a TSO value of 'True' if 50% or more of its spatial definition fell within one or more of the convex polygons we calculated based on (December 2001) data about the extent of Telecom's network, otherwise the segment's TSO value was set at false. The convex polygons were derived from the historic customer locations for each exchange area which were grouped into clusters.

444 Chorus Standard Subdivision Policy, 23 April 2014, Document 7003 v5.5

817. Within Chorus' UFB areas, Chorus will only lay optical fibre in sub-divisions, so there is no effect on its UCLL network.

818. We have included the full capital costs of building the network in the 'standard' sub-divisions. We consider it would generally be efficient for a hypothetical efficient operator to incur all capital costs within our TSO-derived boundary, as it is likely that properties within the boundary will include infill properties, which an efficient operator seeking to gain economies of scale and scope would serve.

819. When sub-divisions are 'high cost', Chorus reserves the right to recover more of the cost, including the cost of extending its network to reach the additional remote or low density end-users.[445] This suggests our decision to use a TSO-derived boundary as an investment proxy is reasonable.

820. We recognise there may be connections outside our TSO-derived boundary that are efficient to serve. However, as we state above, this is simply a proxy.

[445] Chorus' 'high cost' subdivision policy allows for recovery of a number of costs, including: all service company costs, feeder augmentation costs, project management, administration and overhead costs, material costs, record management costs, plus a standard Chorus margin.

Attachment K: Modelling basis for taxation

Purpose

821. This attachment outlines how we have treated tax in our TSLRIC model in the FPP price review.

Our draft decision

822. Our draft decision is that that the TSLRIC-based price we derive will be a pre-tax amount. Given that the price we derive needs to be a pre-tax amount, our draft decision is to adjust the tilted annuity capital charges for each type of asset by taking into account an appropriate tax depreciation rate.

823. The reason for our draft decision is to ensure that the result is not an inaccurate TSLRIC-based price due to an over estimation of the tax position of a hypothetical efficient operator which would occur if the tax model adopted a simple pre-tax calculation that assumed the corporate tax rate.[446]

Our earlier views on tax

824. In our July 2014 regulatory framework and modelling approach paper, we proposed to provide for tax costs in the TSLRIC price by deriving a tax-adjusted tilted annuity charge for each type of asset modelled. In addition to taking into account the relevant asset lifetime and asset price inflation rate, we proposed that each tax-adjusted tilted annuity charge will take into account a diminishing value tax depreciation rate appropriate to that type of asset.[447]

825. We preferred this approach to ensure that we determine an accurate TSLRIC-based price that does not result in an over estimation of the tax position of a hypothetical efficient operator.

Industry responses to our proposed tax approach

826. Chorus argued that our proposed approach assumes that 100% of interest and depreciation tax deductions will be deducted in the year they occur, and that this meant that our tax model assumed that there is a zero probability of the efficient operator ever being in a tax loss position. Chorus argued that this may not be reasonable.[448]

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446 In New Zealand, a firm can reduce its taxation payments by deducting depreciation from the taxable earnings. This depreciation tax shield is computed as the amount of allowable depreciation multiplied by the tax rate. The use of accelerated depreciation methods during the early years of an asset's life will provide for a greater tax shield during the asset's early life and hence increase the NPV of the tax shield.

447 Commerce Commission, "Consultation paper on issues relating to Chorus' proposed changes to the UBA service" 9 July 2014, paragraphs [253]-[258].

448 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraphs [141]-[144].

827. In its cross-submission, Network Strategies also argued that our approach implicitly assumes that the hypothetical efficient operator is not in a tax loss situation and submitted that it is a common approach in LRIC modelling. Network Strategies recommended that we make an explicit statement on the assumed tax situation of the hypothetical efficient operator.[449]

828. We consider that our model provides for the notional tax position of the hypothetical efficient operator because:

828.1 the price that we set is based on a subset of the notional tax position of the hypothetical operator. The overall tax position of the hypothetical efficient operator will include a wider group of other telecommunication services. Within this wider group of services there may be some subsets that incur tax losses, even when the hypothetical efficient operator's overall tax position is positive. This is consistent with the definition of TSLRIC referring to "the service provider's provision of other telecommunication services".

828.2 from a section 18 perspective, it is difficult to see why the competitive market price is likely to be dependent on the tax position of a particular market participant.

829. Analysys Mason, on behalf of Chorus, argued that if we adopt a software implementation using the Excel PMT function for defining the annuity calculation, we need to provide arguments for doing so to avoid the potential for later debate.[450,451]

830. Our response is that the Excel PMT function is a widely used and tested function that provides for transparency.

831. Vodafone, WIK, Network Strategies and Spark submitted that it is unclear how we propose to model tax related cash flows and use of nominal and real cost through the model.[452]

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449 Network Strategies "Final report for Spark New Zealand and Vodafone New Zealand - Cross-submission for consultation on UCLL and UBA FPP regulatory framework - A review of selected issues in submissions on the Commission's consultation paper of 9 July 2014" 20 August 2014, paragraph [7.2].

450 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, Section 1.19.

451 PMT is a Microsoft Excel function that calculates the payment for a loan based on a specified number of constant payments, and a constant interest rate.

452 Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraphs [143]-[145]; Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, pp. 55-56; WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraphs [70]-[71]; Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, Section G.

832. In response to these submissions, we provide a further explanation of our approach in the subsequent section and we publish our tax model with the draft determination to provide more transparency on the approach. WIK submitted that it is common international practice to apply adjustments for tax in the WACC, but that our tax approach is unusual and proposed an alternative formula.[453]

833. Vodafone submitted that tax adjustments should be made within the WACC formula, as corporate taxes impinge on the return on equity capital.[454] Network Strategies recommended using a pre-tax WACC approach.[455]

834. Our response is that our tax approach and an approach to apply tax adjustments for tax in the WACC will result in an equivalent outcome. Our approach applies another way to adjust for tax in the WACC.

835. In its cross-submission, Chorus confirmed this view:[456]

> The derivation of this formula is not provided by the Commission which is perhaps why WIK and Vodafone appear not to understand it. However, it is useful to note that dividing a post-tax WACC of the above form by (1-t), which the Commission formula does, gives the same formula as WIK proposes in equation 13 reproduced above

836. Chorus also argued in its cross-submission that: [457]

> WIK and Vodafone's responses to the Commission's proposals on modelling the cost of tax appear to be based on the incorrect belief that a simple transformation of the WACC can be used to account for the fact that tax depreciation differs from the actual rate at which capital is returned (depreciated) within the tilted annuity.
>
> ….WIK and Vodafone are incorrect in relation to the second dot point. Differences between the rate of tax depreciation and regulatory depreciation (return of capital) must be accounted for separately – which is what the Commission's formula attempts to do.

837. We agree our proposed formula accounts for the differences between accounting depreciation and tax depreciation.

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453 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [71]. Also see [59]-[69].

454 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, Section G9.

455 Network Strategies "Final report for Telecom New Zealand and Vodafone New Zealand - Key issues in modelling UBA and UCLL services - Commission consultation on regulatory framework and modelling approaches for FPP process" 6 August 2014, pp. 53-54. Network Strategies also submitted that our proposed approach is different to the approach used in TSO determinations. We agree. In the TSO determinations, we used the post-tax nominal WACC based on corporate tax.

456 Chorus "Cross-submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 20 August 2014, paragraphs [118] and [150].

457 Chorus "Cross-submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 20 August 2014, paragraphs [117]-[119].

Our tax approach used in this draft determination

838. Our tax model is published with the draft determination.

839. As discussed in our responses to submissions above, our modelling basis for taxation leads to the same outcome as an approach applying adjustments for tax in the WACC.[458]

840. In summary, our approach for the tax adjustment is the sum of the full (infinite life) stream of diminishing value depreciation allowances (i.e. the sum of a power series). Box 1 below explains our approach in more detail.[459]

841. We sourced the diminishing value tax deprecation rates for each asset class defined in our TSLRIC model from IRD.[460] We matched the asset classes defined in our TSLRIC model with the asset classes defined by IRD. For those asset classes defined in our model and not explicitly defined by TERA, we considered the default tax depreciation rate provided by IRD.[461]

842. Our matching exercise and diminishing value used for each asset class, is published as a separate Excel workbook with our draft determination.

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458 Our TSLRIC model also includes some top-down costs, for example IT costs are valued top-down. Our model therefore includes the yearly costs and the cost of capital. The yearly cost is the yearly depreciated value as provided by the accounts. For these costs, we used a simple WACC transformation, i.e. Pre-tax WACC = Post-tax WACC / (1 – t), where t is the company tax rate of 28%. We note that the materiality of the costs valued top-down is low.

459 Further explanation of our view on tax adjustments is in Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" Attachment A, 9 July 2014.

460 http://www.ird.govt.nz/resources/6/5/6576ff004ba3cf748844bd9ef8e4b077/ir265.pdf.

461 We note that the model groups land and buildings together with the same depreciation rate, although in practice land is not depreciable for tax purposes.

Box 1: An explanation of our modelling basis for tax

Suppose we want to find a **pre-tax** tilted annuity factor *K* with which to multiply the capital cost *C* in each asset class to get the annual revenue requirement.

The sequence of revenues starting one year after the expenditure of C will be:

$$KC(1+g); KC(1+g)^2; .....$$

Where:
***K** is the pre-tax tilted annuity factor;*
***C** is the capital cost in each asset class;*
***g** is the asset price growth forecast;*

Tax depreciation allowances will be a sequence:

$$dC; dC(1-d); dC(1-d)^2; .....$$

Where:
***d** is the diminishing value rate*

The post-tax cash flows will be a sequence:

$$KC(1-t)(1+g); KC(1-t)(1+g)^2; .....$$
$$+tdC; tdC(1-d); tdC(1-d)^2; .....$$

Where:
***t** is the corporate tax rate*

The present values of these sequences, at the nominal WACC ***w***, should equal ***C***. The present values are:

$$\frac{KC(1-t)}{PMT(w-g, L, -1)} \quad \text{; and}$$

$$\frac{tdC}{(d+w)}$$

The second term is the sum of the whole power series:

$$\frac{tdC}{(1+w)} + \frac{tdC*(1-d)}{(1+w)^2} + \frac{tdC*(1-d)^2}{(1+w)^3} + ...$$

out to infinity, not just to the asset life. Our view is that this is a good approximation because the rest of the diminished value can be claimed at the end of the asset life.

Attachment L: Cost allocation

Purpose

843. This attachment outlines our draft decisions, as well as earlier views, submissions and subsequent analysis, regarding:

843.1 The preferred approach in our TSLRIC model for allocating forward-looking common costs (being both network costs and non-network costs that are not directly attributable to any of the services being modelled) and including the allocation of costs relevant to clause 4B of Schedule 1 of the Act; and

843.2 The implementation of our preferred cost allocation approach.

844. In our July 2014 regulatory framework and modelling approach paper we distinguished between:[462]

844.1 costs directly attributable, which are those that can be wholly or solely associated with a single type of service; and

844.2 costs not directly attributable, which are all other costs i.e., those that cannot be wholly or solely associated with a single type of service.

845. Costs that are directly attributable are not dealt with in this chapter.

846. Of those costs which are not directly attributable, we distinguished in our July 2014 regulatory framework and modelling approach paper between network costs and non-network costs. These costs require a method of allocation.

Defining network and non-network costs

847. In our July 2014 regulatory framework and modelling approach paper we defined two cost categories within which we would consider how to allocate costs not directly attributable:[463]

847.1 network costs, encompassing common network elements such as exchange buildings; and

847.2 non-network costs, comprising corporate overheads such as finance, human resources, legal and planning departments.

848. WIK submitted in its report for Spark and Vodafone that we use the term "directly attributable" to refer only to costs for which an identifiable cost driver can be found, while all other costs for which no cost driver can be found are shared costs.[464]

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462 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [270].

463 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [273].

849. Similarly, Spark refers to some ambiguity in our terminology related to different types of cost and costs categories, and seeks clarification of this terminology.[465]

850. We therefore consider it helpful to clarify our definition of cost categories. For a complete discussion we refer in particular to TERA's discussion of the different cost categories.[466] By way of summary of TERA's discussion, our cost allocation is concerned with the allocation of:

850.1 what TERA refers to as "joint and network common costs". These are costs which are incurred in producing a given set of services (joint costs[467]), or all services (network common costs). TERA notes that these costs have a causal relationship with a group of, or all, services (rather than only a single service). For consistency with the terminology in our July 2014 regulatory framework and modelling approach paper, we will refer to these costs in this draft decision as "**network costs**", although it is important to bear in mind that it is only the joint and common network costs that are of concern for our cost allocation exercise; and

850.2 what TERA refers to as "corporate overheads" or "non-network common costs". These are costs which are not directly incurred in providing network services, but are nonetheless required to operate a telecommunications company. TERA notes that these costs cannot be allocated in a non-arbitrary way to any particular service or services. For consistency with the terminology in our July 2014 regulatory framework and modelling approach paper, we will refer to these costs in this draft decision as "**non-network costs**".

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464 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand – Submission – In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraphs [75]-[76]. See also Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraphs [G6.1]-[G6.3].

465 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraph [148].

466 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.

467 As noted in Chapter 1 at paragraph 86.2, we use the terminology "shared costs" to refer to these costs.

Allocating network costs: Capacity-based vs Shapley-Shubik

851. Where cost drivers cannot be identified, our preliminary view in our July 2014 regulatory framework and modelling approach paper for the allocation of network costs was to use either a capacity-based approach or a Shapley-Shubik methodology for the UCLL service.[468] In contrast, where cost drivers can be identified, our preliminary view for the allocation of network costs was to adopt a causal approach to the allocation of network costs for the UCLL service.[469]

852. In submissions discussing the issue of cost allocation where cost drivers can be identified, Analysys Mason submitted that the cost allocation approach adopted for each asset should be consistent across services.[470] WIK's report for Spark and Vodafone submitted that input-based approaches are output-based approaches "in disguise", and that even the capacity-based approach essentially amounts to an output-based allocation of costs.[471]

853. In submissions regarding cost allocation where cost drivers cannot be identified, all submissions prefer the capacity-based allocation approach over the Shapley-Shubik approach. For example, Analysys Mason submitted that the Shapley-Shubik approach "leads to an undesirable dependence of the result on the number of services modelled", as well as adding complexity, lacking transparency and being more time consuming.[472] Spark submitted that the most appropriate allocation methodology for network costs is a capacity-based approach rather than a Shapley-Shubik approach.[473] Vodafone submitted that the Shapley-Shubik approach is not in line with best practice in cost allocation.[474]

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468 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [279].

469 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraph [277].

470 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.16].

471 WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraphs [78]-[79].

472 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.17.2]. See also Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [111].

473 Telecom "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Submission Commerce Commission" 6 August 2014, paragraphs [149]-[150].

474 Vodafone NZ "Submission to the New Zealand Commerce Commission - Comments on Consultation paper outlining Commission's proposed view on regulatory framework and modelling approach for UBA and UCLL services" 6 August 2014, paragraph [G6.6].

854. TERA has advised us that the Shapley-Shubik approach is not overly complex – while it requires running the model several times, this is an automatic process. Nonetheless, TERA recommends the use of a capacity-based approach over the Shapley-Shubik approach.[475]

855. We note that, consistent with the submission of WIK referred to above, a capacity-based approach might be considered to be a cost driver-based approach. Indeed, TERA notes that a capacity-based approach follows network cost drivers, where networks are dimensioned to support peak traffic loads.[476] For this reason, in our draft decision we are no longer proposing to distinguish between approaches for the allocation of network costs depending on whether or not cost drivers can be identified.

856. Our draft decision is to use a capacity-based approach for the allocation of network costs in all cases. Our rationale for the use of a capacity-based allocation is:

856.1 A capacity-based allocation is often used in TSLRIC models, and therefore is consistent with our objective of giving greater weight to predictability of approach;

856.2 A capacity-based allocation is a more transparent approach than the alternative Shapley-Shubik approach; and

856.3 Our expert advisor TERA supports the use of the capacity-based approach, noting that this approach follows the cost drivers and allocates a proportionately larger share of network costs to services that have a proportionately greater network loading.[477]

857. We note that all of the submissions agree that we should implement a capacity-based allocation approach. This has also been persuasive.

[475] TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.1.

[476] TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.1.

[477] TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.1.

Implementation of the capacity-based allocation approach

858. Our expert advisors TERA, have recommended the following approach:[478]

> The different infrastructure assets involved in the local access network may be shared with other network levels (FWA, core network, and SLU backhaul). The cost of each asset has therefore to be allocated between the different network levels.
>
> For each asset, the allocation key is computed at the dimensioning step, following the capacity-based approach, consistent with the dimensioning driver.
>
> The costs of trenches and manholes are allocated on the basis of the ducts in the trench...
>
> The costs of ducts are allocated on the basis of the cables surfaces, when copper, and on the basis of the sub-ducts surface, when fibre... The costs of poles are allocated on the basis of the equipment carrried by the poles, i.e. the number of joints...

859. We welcome submissions on this approach.

[478] TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Specification" November 2014, section 8.7.

Allocating non-network costs

Our choice of allocation approach

860. In our July 2014 regulatory framework and modelling approach paper, our preliminary view for the allocation of non-network costs was to use the EPMU methodology. We noted that EPMU was widely used, compared to an alternative Ramsey-pricing methodology which is rarely used in practice and is complex to apply.[479]

861. All those who submitted on this issue agreed that the EPMU methodology was preferable for the allocation of non-network common costs.[480] TERA also recommends the use of the EPMU approach.[481]

862. The EPMU approach is the orthodox approach used in TSLRIC models, and is therefore consistent with our objective of giving greater weight to predictability of approach. It is also relatively simple to implement, compared to the Ramsey-pricing methodology which requires estimates of demand elasticities.

863. Accordingly, we remain of the view that EPMU is appropriate to allocate non-network common costs.

Implementation of the EPMU allocation approach

864. The EPMU approach is typically implemented using accounting cost data from the regulated firm's accounts. To the extent that the regulatory accounts allocate attributable costs (both direct and indirect) across different services, then EPMU involves allocating each service a share of non-network common costs in proportion to that service's share of total attributable costs.[482]

865. We have reviewed Chorus' accounts, and a breakdown of costs by service is not available – costs are allocated to activities and not services.

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479 Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" (9 July 2014), paragraphs [284]-[285]. Ramsey-pricing allocates common costs in proportion to relative demand elasticities for the different services.

480 See, in particular, Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [112]; WIK-Consult "Report for Telecom New Zealand and Vodafone New Zealand - Submission - In response to the Commerce Commission's "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)"" 5 August 2014, paragraph [80]; and Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraph [131]. Spark's agreement with the use of EPMU is caveated on the basis that appropriate care is taken to ensure that the relevant costs are small relative to other costs, so as to avoid a proportionate efficiency distortion.

481 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.2.

482 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Reference Paper" November 2014, section 4.1.2.

866. However, Chorus' accounts do provide a breakdown of revenue by service. Our draft decision is therefore to use this revenue breakdown by service as a proxy for the EPMU approach. That is, we allocate a share of non-network common costs to each service in proportion to that service's share of revenue.

867. We recognise that this is not strictly how the EPMU approach is applied, but in the absence of the appropriate cost data we consider that the revenue approach is the best available proxy. The suitability of this approach as a proxy for EPMU relies on the assumption that revenue is distributed across services in similar proportions to total attributable costs.

868. Where this is not the case (which may be because the mark-up on costs is proportionately greater for some services than for others, for example, those services for which demand is relatively more inelastic), the revenue approach has some similarities with the Ramsey-pricing approach. Under this revenue-based allocation approach, relative to the traditional EPMU approach, an access provider would only under-recover its costs of providing the service for which we set a regulated price if it were to earn a greater profit margin on unregulated services relative to regulated services.

Avoiding double recovery in allocating costs between UCLL and UBA

869. We consider that clause 4B of the Act does not require us to use the same MEA for UBA and UCLL, though using different MEAs raises issues regarding potential double recovery.[483]

870. In the MEA paper by TERA, that was published with our July 2014 regulatory framework and modelling approach paper, TERA identified potential double recovery in using different MEAs for UBA and UCLL.[484]

    870.1 TERA identified potential double recovery arising from the backhaul cost, situated between a cabinet and a MDF.

    870.2 TERA argued that this part of the network is counted twice if we were to use a FTTN MEA for UBA and a FTTH MEA for UCLL.

[483] Commerce Commission "Further consultation paper on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" (14 March 2014), Attachment A (James Every-Palmer "FPP determination: Issues re service description and the modern equivalent asset" (12 March 2014)), paragraph [31].

[484] TERA Consultants "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services: - Modern Equivalent Assets and relevant scenarios" July 2014, pp.73-74.

871. Both Chorus and Spark submitted on the potential double recovery identified in TERA's paper:

871.1 Chorus disagreed with TERA and argued that there is no double recovery of costs recovered in prices. Chorus submitted that the intention of the Act is that the UBA price should recover the cost of the copper and fibre feeder.[485] Chorus also argued that a new entrant providing UBA would be charged by the copper incumbent for the copper local loop and incur the additional costs of installing the fibre feeder.[486]

871.2 Spark agreed with TERA and argued that there is a potential for double recovery. Spark's view is that we need to eliminate the double recovery because access costs are mapped to a number of services and this raises the potential for costs to be double counted.[487]

872. We agree with Spark and TERA that there is a potential for double recovery in modelling a FTTN MEA for UBA and a FTTH MEA for UCLL.[488] That is because the same trench is covered more than once in the TSLRIC model for UBA and the TSLRIC model for UCLL. This is the trench and duct costs between an active cabinet and MDF.

873. We disagree that we have to model the copper feeder between the active cabinet and the exchange, on the basis that we consider that the hypothetical efficient operator would not deploy copper alongside fibre between the cabinet and the exchange.

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485 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [152].

486 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [153].

487 Spark New Zealand "UCLL and UBA FPP: consultation on regulatory framework and modelling approach - Cross-submission Commerce Commission" 20 August 2014, paragraph [143].

488 We note that there is potential for double recovery even if we were modelling FTTN MEA for both services. The only difference is with a FTTN MEA, we would be able to identify the separate costs for the network components to avoid double recovery.

874. Accordingly, to ensure that trench and duct costs between an active cabinet and an exchange are not included in both the UBA TSLRIC model and UCLL TSLRIC model, our proposed approach is to:

874.1 Calculate the potential double recovery as a result of the trench shared between UBA and UCLL.

874.2 Allocate trench and duct costs between UBA and UCLL. The cost allocation is based on the capacity-based allocation approach. The capacity of the trench is the number of cables or ducts that can be installed in the trench.[489]

874.3 UBA TSLRIC costs should be reduced by the UCLL share to avoid potential double recovery.[490]

875. Our modelling experts, TERA, also identified another source of potential double recovery as a result of using different MEAs for UBA and UCLL. If we were to model the use of smaller fibre coverage areas compared to copper coverage areas, then we would have potential double recovery because we would have more exchanges in the fibre scenario than the copper scenario. However, this is not the case in our TSLRIC modelling exercise because the coverage areas in both MEAs are the same.[491]

Other issues: Common costs in UFB areas

876. Chorus has submitted that:[492]

> If UFB services are not included in the demand for the modelled operator (consistent with Chorus' proposal), then common costs (particularly trench and duct costs) in Chorus UFB areas will need to be allocated between copper and fibre.

489 We used cable surface or duct surface when there are dedicated ducts to allocate the costs of.

490 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Specification" November 2014, section 8.9.2.2.

491 TERA "TSLRIC price review determination for the Unbundled Copper Local Loop and Unbundled Bitstream Access services - Model Specification" November 2014, section 8.9.2.2.2.

492 Chorus "Submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 6 August 2014, paragraph [114]. See also Chorus "Cross-submission in response to the Commerce Commission's Consultation paper outlining its proposed view on the regulatory framework and modelling approach for UBA and UCLL services (9 July 2014)" 20 August 2014, paragraph [129].

877. Analysys Mason elaborates on this point, explaining that if the modelled regulated services are based on the demand for regulated copper plus UFB demand, then an allocation of costs in UFB areas to both copper and fibre services would not provide the modelled operator with expected cost recovery.[493] Only if demand for UFB services was not included in the modelled demand would such a cost allocation be necessary.[494] Analysys Mason states:[495]

> In short: if UFB demand is included in the modelled demand for regulated services, then it must not also be allocated costs separately. Conversely, if UFB demand is not included in demand for the modelled regulated services, then it could be allocated costs separately.

878. Our draft decision is for all end-user demand (whether using regulated copper or UFB) within UFB regions to be modelled. We are also not proposing to allocate costs in UFB areas between copper and fibre services. Accordingly, our draft decision is consistent with the first sentence of the Analysys Mason passage quoted immediately above. The remainder of the Chorus/Analysys Mason submission on this particular issue does not apply as it is predicated on us excluding UFB demand from the demand for the modelled operator.

493 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.17.5].

494 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.17.6].

495 Analysys Mason "Report for Chorus - Response to Commission consultation on regulatory framework and modelling approach for UCLL and UBA" 6 August 2014, paragraph [1.17.5].

Attachment M: Confidentiality and data processes

Purpose

879. In this attachment we set out our approach to data collection and the treatment of confidential information used in our TSLRIC modelling process, including:

879.1 the steps we have taken to collect data required for our modelling;

879.2 the steps we have taken to protect the confidentiality of information collected; and

879.3 how confidential information is treated in the model.

We have issued notices for information under section 98 of the Act

880. We have issued notices for information under section 98 of the Act to source modelling information we required.[496]

881. In response to these notices, we received data and files from third party information providers. Where further clarifications to this information were required, requests for these were logged and third parties submitted updated files and / or updated covering letters containing required information.

We have issued information protection orders for information obtained in relation to these proceedings

882. We have made orders under section 100 of the Commerce Act 1986 to enable us to share some of the information we have collected during this process that we consider would be relevant and useful to interested parties. The orders protect the confidentiality of information obtained in these proceedings. The orders include rules for access to, and the use of information, as well as rules for reviewing the status of information and who may access information. This section sets out the process we undertook before issuing the section 100 confidentiality orders.

883. We first set out our preliminary views on our approach to confidentiality at an industry workshop on 28 March 2014, and our indicative process for making a section 100 confidentiality order and determining the persons who would be entitled to access confidential information in accordance with the order.

[496] Notices issued by us are available on the Commission's website at http://www.comcom.govt.nz/regulated-industries/telecommunications/regulated-services/standard-terms-determinations/unbundled-copper-local-loop-and-unbundled-bitstream-access-services-final-pricing-principle/.

884. Parties submitted on their preferred approach to confidentiality orders in their submissions of 11 April 2014. Vodafone and Spark both supported an approach that would not limit access to confidential information to external advisors.[497] In explanation, Vodafone stated:[498]

> Vodafone very much hopes that the content of a s 100 order can be settled by agreement between the parties. However, we are strongly opposed to a confidentiality process that would limit access to confidential information to external counsel only. In our view this would:
>
> (a) drive significant cost and complexity for interested parties wishing to engage with the key assumptions which will necessarily underpin the TSLRIC model;
>
> (b) prevent parties from leveraging the (often unique) expertise, especially in relation to network services and cost modelling, which already exist within their organisations;
>
> (c) increase the difficulty for interested parties to adequately engage in what is already a tight timetable; and
>
> (d) would be inconsistent with both past processes handling confidential information (where certain, nominated, internal advisors have been permitted to access confidential information) as well as the process adopted in other domains (such as due diligence), where parties have consistently demonstrated their ability to deal with confidential information in an appropriate manner.

885. Chorus opposed a confidentiality framework that would allow access to confidential information to internal advisors, arguing that:[499]

> Providing wider access will not achieve predictability, as it is the Commission's view on the modelling approach and section 18 and the outcome of the modelling, not the raw data that provides predictability.

886. On 29 August 2014, we released draft section 100 orders for both the UBA and UCLL price review determinations, and sought parties' feedback. We also requested that parties provide us with the names and certain other information about their nominated counsel and the internal and external experts they considered should be allowed access to the confidential information made available under the orders. For internal persons, including any internal nominated counsel, we also required a statement as to the extent to which they participate in or contribute to strategic or commercial decision-making on behalf of their organisation.

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497 Vodafone "Comments on further consultation papers on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle", (11 April 2014), at paragraph [E2]-[E3]; Spark "UCLL and UBA FPP: further consultation and supplementary paper" (11 April 2014), at paragraphs [82]-[84].

498 Vodafone "Comments on further consultation papers on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle", (11 April 2014), at paragraph [E3].

499 Chorus "Submission in response to the Commerce Commission's Further consultation on issues relating to determining a price for Chorus' UCLL and UBA services under the final pricing principle" (11 April 2014), at paragraphs [42]-[43].

887. Our view was that the draft orders:

887.1 would apply to all information identified as confidential in submissions made in the course of the proceedings, including information provided in response to a request for information made under section 98 of the Commerce Act 1986 in the proceedings;

887.2 would provide for two tiers of protection: restricted information, for information accessible to all persons listed in the orders, and additional protection, which would be made available to the persons listed in the orders only on terms and conditions we determined on a case-by-case basis;

887.3 all information made subject to the orders would be treated as restricted information unless a request for additional protection was received;

887.4 additional protection would be granted only in where it was evident that the protection of the restricted information under the terms of the orders would likely be inadequate to avoid unreasonable prejudice; and

887.5 would allow for limited numbers of internal experts to sign up to the orders where they could directly contribute to submissions on the draft determination, such as internal modellers, engineers, or economists.

888. Submissions on the terms of the orders were received on 12 September 2014, along with the requested list of nominated persons and counsels, and supporting information about their role, areas of expertise, and information about the extent of their participation in strategic or commercial decision-making.

889. Chorus proposed that:

889.1 internal experts be granted access only in exceptional circumstances where they have the requisite expertise and do not provide input into or make decision on commercial matters; and

889.2 the model only be made available to external economic experts.

890. Chorus considered that this approach would provide sufficient transparency for parties to effectively participate in the proceedings, and would strike a more appropriate balance with their confidentiality concerns. Chorus raised the concern that "internal regulatory experts, including economic experts and cost modellers, may have a degree of input into both regulatory and commercial decisions in their day-to-day roles", and therefore:

> The practical risk is that confidential information could be directly or indirectly used for other purposes (whether intentionally or not), despite the best intentions of the Proposed Order and those signing the undertakings.

891. Chorus also considered that section 98 information should be excluded from the proposed orders unless it was included in the draft model or reasons paper. Chorus also considered that we should specify in the order the circumstances under which an internal expert would be granted access to restricted information, including a definition of what it means to act in a 'commercial capacity'. Chorus' view was that it was insufficient to limit access only to internal persons who make commercial decisions or are involved in commercial negotiations.

892. Spark supported setting a high threshold for additional protection, and that we should favour access to confidential information by both internal and external experts. They considered that:

> The need to achieve a high quality and durable regulatory decision requires a high level of engagement by a broad range of knowledgeable participants, a high degree of transparency in all material aspects of the decision, and a full opportunity to interrogate, test and challenge data and assumptions used.

893. Spark argued that there should be a very high materiality threshold before information was granted additional protection.

894. Spark also proposed that internal nominated counsel be able to access information over which additional protection was granted, so long as they were not directly involved with commercial decision-making.

895. Vodafone also supported allowing internal nominated counsel access to information given additional protection. Vodafone was otherwise generally supportive of the terms of the order:

> which in our view properly balance the interests of all parties in ensuring that confidential information that would or might cause harm to their interests if disclosed is protected, with the countervailing interest that all parties have in ensuring that information can be disclosed to the extent necessary to enable them to properly understand the reasons underlying UBA and UCLL price review determinations, to comment meaningfully on these reasons, and to participate in the decision making process.

896. Following receipt of lists of proposed nominated persons, we forwarded the non-confidential information relating to the nominated persons to each party, with a request that objections be received by 19 September 2019.

897. We considered the information provided was sufficient for other parties to be able to understand, in principle, the extent to which the nominated persons may contribute materially to strategic and commercial decision-making, and therefore may pose an increased risk of a breach of the section 100 orders through the use, explicit or implicit, of the confidential information that might be provided, and in a way that would be likely to cause commercial harm or prejudice.

898. Only Chorus submitted objections to the proposed nominated persons. Chorus objected to all nominated internal persons, other than internal counsel. In explanation, Chorus stated that:

> We are of the view the disclosure of restricted information to internal experts would be unduly prejudicial to our commercial position, irrespective of the best intentions of those signing the order or any restrictions imposed on the use/misuse of that information under the Proposed Order.

899. Chorus argued that the information provided in relation to the nominated persons was insufficient to persuade Chorus that their access to restricted information would not be unduly prejudicial.

900. Following consideration of Chorus' objections, we sought additional information from Vodafone, Spark, and CallPlus about their internal nominated experts. This additional information was taken into consideration, along with all submissions and Chorus' objections, in our decision on who would be entitled to sign up to the confidentiality undertakings in accordance with the orders.

901. In determining who should have access to restricted information in accordance with the orders, we have considered, amongst other things:

901.1 the individual's ability to provide specialist expertise or knowledge that may materially contribute our determination of the proceedings;

901.2 the individual's role in, or contribution to, strategic or commercial decision-making of the party nominating them; and

901.3 the likelihood of any commercial prejudice to a party should the person have access to restricted information in accordance with the orders.

902. A key consideration in our assessment was whether the person had sufficient specialist knowledge or expertise to meaningfully contribute to our proceedings. Mere familiarity is not enough – the nominated persons should be able to provide a meaningful contribution to a party's submissions in the proceedings.

903. In considering the likelihood of commercial prejudice, we were not persuaded by Chorus' argument that any form of commercial activity by the person should preclude them from access. Instead, we considered each individual's role in and ability to influence the setting of prices or negotiation of contracts, and whether there was a material risk that the individual could take advantage of any of the information in a way that might lead to commercial prejudice. Where the person does not normally contribute to such activities, we consider the likelihood of prejudice low, as self-monitoring and the deeds and protections under the section 100 orders should be sufficient.

904. Where the persons actively engaged in such activities to an extent that could lead to material detriment (whether through commercial prejudice to another party's position, or to an unfair commercial advantage), we considered that these persons should be precluded from access to the restricted information. We were particularly sensitive to cases where 'mere knowledge' might be sufficient to lead to commercial prejudice.

905. We issued section 100 confidentiality orders, along with the list of persons entitled to sign up to the orders, on 22 October 2014. We also requested that all parties submit any requests for additional protection in relation to information previously provided in relation to the proceedings by 4 November 2014. These requests were considered in our decision on what information to make available to the internal and external experts entitled to sign up to the orders.

906. We will keep the orders under review, including whether access to the information provided in the data room should continue after the due date for cross-submissions.

Summary of the section 100 confidentiality orders

907. The section 100 orders provide for two categories of information, restricted information (RI), and confidential information (CI) which qualifies for additional protection because of its commercial sensitivity.

908. Under the section 100 orders all section 98 information is RI unless it is public information or is CI.

909. We have designated documents/files as CI where they contain information which appears to be commercially sensitive and where its release could prejudice the owner of the information or a third party. This will include genuine trade secret and commercially sensitive information such as information about investment plans, strategic intentions, production volumes/capacity and prices that are not public.

910. In reaching our decisions on the information to be treated as CI, we have reviewed each document over which additional protection was sought. In making our assessment, we have also relied on the information provided by parties when claiming additional protection, in our analysis of potential harm.

911. Where information has been given additional protection, the section 100 orders provide a process under which parties can request that the scope of the additional protection be modified. In this way, parties may request an adjustment to our decisions on the additional protection that applies to information. If a party considers it necessary for an internal person to have access to information for which additional protection has been provided they can also seek the re-designation of the information designated as CI. We will assess any such requests on a case-by-case basis, and will make reasonable efforts to make a decision on such requests within two working days.

How confidential information is treated in our models

912. We have released two versions of the model (with the exception of the opex part of the model where we have only produced a confidential version) alongside our draft decision: a public version, and a version for which additional protection has been granted.

913. The public version of the model is a fully-functional version of the model, and therefore is capable of being interrogated, audited, and tested. Confidential information in the public version of the model has been altered by randomly changing the values of the input data.

914. As a result, the outputs (prices) of the public version of the model and its component parts will differ from the prices contained in our draft decision.

915. There is no public version of the opex part of the model. The opex part of the model reflects Chorus' internal financial costs and systems, which are confidential to Chorus. We have therefore only released a confidential information version of the opex part of the model.

916. We consider that the public version of the model is sufficient for interested parties, including internal modelling experts, to fully test the working assumptions and parameters of the model, without divulging the confidential information contained in the model. Nominated persons with access to the confidential information will be able to access that information in the virtual data room.

917. The complete model, which is subject to additional protection, contains all of the confidential information used in the model. Confidential information included in the model is highlighted in blue.

918. The model has been designed to ensure the accuracy and security of the confidential information contained in the model.

919. The sources of the confidential information are noted in the complete model and the accompanying documentation, and are available to the relevant nominated persons in the virtual data room we have established for the purposes of this consultation process.

920. Any additional information considered by the Commission and its consultants in relation to the model has also been made available in this data room.

921. In deciding on what information should be made available in the data room, we have balanced the interest of parties in protecting their confidential information against the need to ensure a participatory consultation process and to comply with our obligation to provide sufficient information for parties to meaningfully submit on our decisions. We have taken this approach to ensure that the process we adopt is workable and reasonably efficient.

Submissions on confidential information

922. Parties may use and refer to restricted information and confidential information in their submissions on the draft decision and model. All submissions must comply with the information protection orders we have issued.

923. We notified parties to the information protection orders on Wednesday, 19 November 2014 of our decisions on requests for additional protection we received in relation to section 98 information provided to us.[500] That notice identifies the information for which additional protection has been given, and the nature of that protection.

924. Parties should be mindful of the classification of information contained in the virtual data room or used in our draft model if any of the material is referred to or cited in submissions to us.

925. Where parties submit their own models, or revised versions of our models, they should clearly identify all confidential and restricted information contained in the model(s) in the manner required by our section 100 orders. Parties are expected to include a public version of any model submitted to us.

[500] We are still in the process of adding further information to the data room and assessing the confidentiality of that information.

Attachment N: Implementation of aggregation to allocate ULL costs to UCLL and SLU services, and our approach to urban and non-urban areas

Purpose

926. This attachment sets out the implementation of our aggregation approach, which is used to map costs to the UCLL and SLU services.

927. As noted in Chapter 3, because our FTTH/FWA model does not include active cabinets, our model cannot directly determine UCLL and SLU costs. However, because we are required to update the UCLL and SLU STDs, we must find a way to determine prices for these services.

928. As also explained in Chapter 3, our draft decision is to set the same price for access between the end-user and the exchange, irrespective of whether the line is cabinetised or non-cabinetised. We refer to this approach as aggregation, and it requires that the price for UCLL = the price for SLU + the modelled TSLRIC price for SLU backhaul.

929. The formulae used in our model to implement the aggregation approach are set out in more detail in this attachment.

930. We also set out in this attachment our approach to converting annualised TSLRIC costs determined from our model for urban and non-urban areas into prices.

Formulae used in model to implement aggregation

931. To implement our aggregation approach, we allocate the monthly TSLRIC unit costs for ULL to UCLL and to SLU respectively. We are using the demand for UCLL and SLU, as well as the monthly unit TSLRIC costs for SLU backhaul, to determine the relationship between UCLL and SLU. Before we provide our formula, we first explain the inputs used to determine the relationship between UCLL and SLU.

932. The inputs are:

    932.1 The TSLRIC model, which determines the monthly TSLRIC unit costs for ULL and SLU backhaul;

    932.2 The demand for ULL, which is the total number of current connections. This is the same as the demand profile set out in Attachment A; and

    932.3 The demand for SLU backhaul, which is the number of UBA connections at an active cabinet.[501]

933. We assume that demand for SLU is equal to demand for SLU backhaul. This assumption is supported by the fact that both services are used together in most cases.[502]

[501] We use the term "demand" in respect of SLU backhaul loosely – it is not intended to imply the final demand for the SLU service, but rather refers more generally to the relevant measure of output over which the costs of SLU lines are recovered.

934. We also apply the relationship that demand for UCLL is equal to the total demand for ULL minus the demand for SLU.

935. To implement aggregation, the cost per line should be the same whether or not the line is cabinetised:

$$UCLL = SLU + SLUBH$$

936. Our starting point is to calculate the average cost per line to connect all customers:

$$Cost\_per\_line_{unit} = \frac{C_{ull} + C_{SLUBH}}{Demand_{ULL}}$$

Where
- **Cost_per_line$_{unit}$** is the average cost per line to connect all customers
- **C$_{ull}$** is the estimated monthly cost of the unbundled local loop from the TSLRIC model
- **C$_{SLUBH}$** is the estimated monthly cost of sub-loop backhaul from the TSLRIC model
- **Demand$_{ULL}$** is the demand profile

937. Since, from the equation at paragraph 935, the cost per line is the same whether or not the line is cabinetised, it follows from the equation in paragraph 936 that the cost per line for UCLL is:

$$UCLL = \frac{C_{ull} + C_{SLUBH}}{Demand_{ULL}}$$

938. The cost per line for SLU backhaul is calculated as follows:

$$SLUBH = \frac{C_{SLUBH}}{Demand_{SLUBH}}$$

Where
- **SLUBH** is the average cost per line for SLU backhaul
- **C$_{SLUBH}$** is the estimated monthly cost of SLU backhaul from the TSLRIC model
- **Demand$_{SLUBH}$** is the demand profile for UBA connections at active cabinets

939. Rearranging the equation at paragraph 935, and substituting in the equations at paragraphs 937 and 938, the cost per line for SLU is therefore:

$$SLU = UCLL - SLUBH = \frac{C_{ull} + C_{SLUBH}}{Demand_{ULL}} - \frac{C_{SLUBH}}{Demand_{SLUBH}}$$

940. It is this equation that is used in our model to determine the SLU cost, based on the inputs as discussed above at paragraph 932.

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[502] We are only aware of one case where the services are not used in a bundle, where an access seeker is unbundling at a cabinet but is providing its own backhaul.

Cross checks on our aggregation approach

941. To test our aggregation approach, we considered cross checks for:

941.1 Efficient cost recovery; and

941.2 Relativity.

Efficient cost recovery

942. To ensure that there is efficient cost recovery, we considered that estimated revenues across all of UCLL, SLU backhaul and SLU should be equal to the estimated TSLRIC cost of the full local loop.

943. The estimated revenues across all of UCLL, SLU backhaul and SLUs can be represented as follows:

$$Demand_{UCLL} * UCLL + Demand_{SLUBH} * SLUBH + Demand_{SLUBH} * SLU$$

944. Substituting the cost per line for UCLL (at paragraph 937), SLUBH (at paragraph 938) and SLU (at paragraph 939) in the equation immediately above, and simplifying, results in $\mathbf{C_{ULL}}$ plus $\mathbf{C_{SLUBH}}$. This is the modelled TSLRIC cost of the unbundled local loop plus the modelled TSLRIC cost of sub-loop backhaul, which is equivalent to the cost of the full local loop. It is therefore the case that estimated revenue across UCLL, SLU backhaul and SLU does equal the estimated cost of the full local loop, and thus our aggregation approach meets our efficient cost recovery test.

Relativity

945. To ensure that our aggregation approach provides uniform incentives for unbundling between cabinetised and non-cabinetised lines, we estimated the costs that an efficient operator, almost as efficient as our hypothetical efficient network operator, would incur in purchasing a wholesale UBA product in comparison to unbundling and sub-loop unbundling.

946. In our July Regulatory Framework and Modelling Approach paper, we listed the elements of costs incurred in purchasing a wholesale UBA product in comparison to unbundling and sub-loop unbundling, which is replicated in Table 11 below.[503] We did not receive any submissions on this table from our July Regulatory Framework and Modelling Approach paper.

[503] Commerce Commission "Consultation paper outlining our proposed view on regulatory framework and modelling approach for UBA and UCLL services" 9 July 2014, paragraph [211], Table 1.

Table 11: Comparing UBA with the cost to unbundle cabinets and exchanges

Service	Costs
Purchasing the UBA service	UCLL price UBA "additional costs"
Unbundling on non-cabinetised lines	UCLL costs for DSLAMs, Co-location Backhaul to FDS
Unbundling on cabinetised lines	SLU and SLU Backhaul costs for DSLAMs, Co-location Backhaul from the exchange to FDS

Source: July Regulatory Framework and Modelling Approach paper, Table 1

947. Table 12 below lays out the estimated TSLRIC costs for each of the cost elements identified in our July paper.

Table 12: Comparing estimated TSLRIC UBA costs with the estimated TSLRIC cost to unbundle cabinets and exchanges

Service	Costs (NZ$, monthly unit constant nominal prices)
Purchasing the UBA service	UCLL price (28.22) UBA "additional costs" (10.17) **Total UBA price (38.39)**
Unbundling on non-cabinetised lines	UCLL (28.22) costs for DSLAMs (5.42) Backhaul to FDS (4.87) **Total cost to unbundle on non-cabinetised lines (38.51)**
Unbundling on cabinetised lines	SLU (14.45) SLU Backhaul (13.77) costs for DSLAMs (5.24) Backhaul from the exchange to FDS (4.87) **Total cost to unbundle on cabinetised lines (38.33)**

Source: Commission's draft TSLRIC model (note that co-location is excluded for purposes of this calculation)

948. Table 12 shows that:

948.1 The cost for an unbundler is similar, whether they are unbundling a non-cabinetised line or a cabinetised line; and

948.2 UBA additional costs are aggregated and this means that the relativity (or economic space) is similar for unbundlers and sub-loop unbundlers.

949. This shows that our aggregation approach provides uniform incentives to unbundle. For example, an efficient operator, almost as efficient as our hypothetical efficient network operator, would face a similar cost in unbundling a cabinetised line compared to unbundling a non-cabinetised line, and this is similar to the cost of a wholesale UBA product.

950. Accordingly, our view is that the relativity requirement is met by our aggregation approach.

Converting TSLRIC costs to prices for urban and non-urban areas

951. As explained in Chapter 1, clause 4A of Schedule 1 of the Act requires that we must determine prices that apply throughout the geographical extent of New Zealand.

952. We must determine prices to be included in the separate STDs for UCLL and SLU that are currently in place. The single, geographically averaged price for each of UCLL and SLU only applies from 1 December 2014.[504]

953. Our TSLRIC model determines annualised TSLRIC costs for urban and non-urban areas. We follow the same steps as set out in Chapter 3 to convert these annualised TSLRIC costs to monthly unit TSLRIC costs for each of the five years of the regulatory period, for each of urban and non-urban areas, and for each of the UCLL and SLU services. We then levelise these costs to determine a constant TSLRIC-based price in nominal terms over the regulatory period, again using the approach to levelising discussed in Chapter 3.

954. Table 13 below presents the constant nominal prices for UCLL and SLU, for each of urban and non-urban areas.

Table 13: Constant nominal monthly prices for UCLL and SLU, 2015-2019 [NZ$]

	Urban	Non-urban
UCLL	20.63	47.73
SLU	14.45	7.43

Source: Commission's TSLRIC model for draft decision

955. To calculate the geographically averaged price, we calculated the weighted average constant nominal price for each of UCLL and SLU. We weighted by demand, i.e. the number of lines for urban and non-urban areas.

956. We used the following formula to apply the geographic averaging:

$$National\_Price = Price_{urban} \times \frac{Demand_{urban}}{Demand_{total}} + Price_{rural} \times \frac{Demand_{rural}}{Demand_{total}}$$

Where
- **National_Price** is the geographically averaged price.
- **Price** $_{urban}$ is the levelised price determined for urban areas.
- **Demand** $_{urban}$ is calculated as the average number of lines over the regulatory period in urban areas.
- **Price** $_{non\text{-}urban}$ is the levelised price determined for non-urban areas.
- **Demand** $_{non\text{-}urban}$ is calculated as the average number of lines over the regulatory period in non-urban areas.
- **Demand** $_{total}$ is the total number of lines over the regulatory period.

[504] Amendment Act, s 73(3).

957. Table 14 below presents the national constant nominal prices for UCLL and SLU using the above calculation.

Table 14: Monthly national constant nominal prices for UCLL and SLU, 2015-2019 [NZ$]

	National (geographically averaged)
UCLL	28.22
SLU	14.45

Source: Commission's TSLRIC model for draft decision