Project no. 13.01/13299

Public version

Final determination on the benchmarking review for the unbundled copper local loop service

Decision No. NZCC 37

Determination under section 30M and section 30R of the Telecommunications Act 2001

The Commission: Dr Stephen Gale
Anita Mazzoleni
Pat Duignan

Date of determination: 3 December 2012

1472475.1

Table of contents

Acronyms and abbreviations

ACCC	Australian Competition and Consumer Commission
Act	the Telecommunications Act 2001
Amendment Act	Telecommunications (TSO, Broadband, and Other Matters) Amendment Act 2011
BU-LRIC	bottom up long run incremental cost
FAC	fully allocated cost
FLCB	forward-looking cost-based
FPP	final pricing principle
FTTN	fibre-to-the-node
FX	foreign exchange
IPP	initial pricing principle
LRIC	long run incremental cost
MDF	main distribution frame
MPF	metallic path facility
POTS	plain old telephone service
PPI	producer price index
PPP	purchasing power parity
STD	standard terms determination
TELRIC	total element long run incremental cost
TSLRIC	total service long run incremental cost
TSO	telecommunications service obligations
UBA	unbundled bitstream access
UBA STD	UBA standard terms determination
UCLFS	unbundled copper low frequency service
UCLL	unbundled copper local loop

UCLL STD	UCLL standard terms determination
UNE-L	unbundled network element - loop

Executive summary

1. This determination sets out updated prices for the unbundled copper local loop (UCLL) service. The UCLL service enables telecommunications providers to rent Chorus' copper telephone lines to provide voice and broadband services to consumers.

2. The Commission is required to set UCLL prices by international benchmarking. Prices for the UCLL service were originally set five years ago, as part of the UCLL standard terms determination which was released in November 2007.[1]

3. This determination concludes the Commission's benchmarking review for the UCLL service. This review was conducted under section 30R of the Telecommunications Act and in accordance with sections 30K to 30M of the standard terms determination process. The purpose of the UCLL benchmarking review was to update the benchmarking data used to determine UCLL monthly rental and connection charges.

4. The Commission commenced the UCLL benchmarking review on its own initiative, because a significant period of time had passed since the original benchmarking was conducted. No party sought to have the UCLL standard terms determination reviewed or updated during the intervening years.

Updated UCLL monthly rental prices

5. The updated geographically averaged UCLL monthly rental price is $23.52, which represents a 3.85% reduction from the current price of $24.46. The updated geographically averaged monthly rental price comes into effect on 1 December 2014, which is three years from Telecom's separation day.

6. Updated urban and non-urban UCLL monthly rental prices, of $19.08 and $35.20 respectively, have also been set. The updated urban and non-urban prices come into effect immediately.

7. In reaching this decision, the Commission first attempted to apply the "peer group" benchmarking approach that was used in the 2007 UCLL standard terms determination. However, we were unable to find a satisfactory "peer group" of comparable countries with forward-looking cost-based UCLL prices to benchmark against.[2]

    7.1 Applying the comparability criteria used in 2007 resulted in a benchmark set of one country (Sweden), because most of the observations were excluded due to the population density criterion. This is not a reliable sample to set a regulated price in the context of this review.

---

[1] Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007.

[2] A significant number of jurisdictions included in the 2007 UCLL standard terms determination benchmark set no longer have forward-looking cost-based prices. For example, US states no longer meet the "forward-looking cost-based" benchmarking requirement. See paragraphs 101 to 109 below.

7.2 Excluding US states, which no longer have forward-looking cost-based prices, also has a significant downwards influence on the outcome of the peer group benchmarking.

8. Therefore, three approaches to updating the UCLL monthly rental prices were considered in this review. These approaches all involve relaxing the population density comparability criterion used in the 2007 UCLL STD.

8.1 **The raw benchmarking approach:** Under this approach the population density comparability criterion is removed, to ensure that a sufficiently large list of benchmarked countries is available. No adjustment is made for the expected downwards bias associated with removing the population density comparability criterion and excluding US states.

8.2 **The econometric adjustment approach:** This approach uses the econometric equation developed for the 2007 UCLL STD to adjust (normalise) the raw benchmarking data. This approach is intended to correct for the expected downwards bias resulting from removing the population density comparability criterion and excluding US states. The econometric adjustment approach was adopted in the revised draft decision.[3]

8.3 **The indexing approach:** This approach involves benchmarking price trends for those jurisdictions that consistently applied a forward-looking cost-based pricing method at the time of the UCLL STD (in 2007) and at the present day. This approach was adopted in the draft UCLL averaging decision (ie the September 2011 draft decision).[4]

The raw benchmarking approach is not valid for this review

9. We continue to have the same concerns regarding the raw benchmarking approach that were outlined in the September 2011 draft decision. Raw benchmarking does not adequately apply the comparable countries requirement of the initial pricing principle in the context of this review.

9.1 Due to the inclusion of high density countries and the exclusion of US states, the Commission considers that the raw benchmarking approach results in a benchmark set that is biased downwards.

9.2 The outcome under this approach is a reduction in the UCLL monthly rental price of approximately 30%. The 30% reduction is driven by the inclusion of countries that did not meet the 2007 comparability criteria, and the exclusion of US states. Excluding US states drives a significant portion of the reduction.

[3] Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012.

[4] Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011.

10. The econometric adjustment and indexing approaches, on the other hand, address the expected downwards bias in the benchmarking data set that results from removing the population density comparability criterion and excluding US states.

Econometric adjustment approach

11. In the 2007 UCLL standard terms determination, the Commission examined the impact of potential cost-drivers on UCLL monthly rental prices as part of an econometric model.

12. Under the econometric adjustment approach, the results of the 2007 econometric model are used to adjust the benchmarked UCLL monthly rental prices. This has the effect of correcting for the expected downwards bias associated with removing the population density comparability criterion and excluding US states.

13. The econometric adjustment approach results in a 5.58% reduction in the geographically averaged UCLL monthly rental price.

Indexing approach

14. Under the indexing approach, forward-looking cost-based UCLL prices at the time of the UCLL STD are compared to current forward-looking cost-based UCLL prices. The percentage change in prices over this time period is calculated, and applied to the price that was set in the original UCLL STD.

15. The Commission considers that the removal of the population density comparability criterion and exclusion of US states does not result in a downward bias when benchmarking using the indexing approach.

16. Benchmarking percentage changes ensures that the prices in the UCLL STD are updated to reflect changes in cost, rather than a change in benchmarking methodology. Therefore, this approach has the significant benefit of maintaining consistency with the prices that currently apply under the UCLL STD.

17. The indexing approach leads to a 2.11% reduction in the geographically averaged UCLL monthly rental price.

Conclusion on benchmarked UCLL monthly rental price

18. The Commission considers that the econometric adjustment and indexing approaches are both valid methods for updating the benchmarked UCLL monthly rental prices. These approaches both address the expected downwards bias associated with removing the population density comparability criterion and excluding US states. Therefore, the econometric adjustment and indexing approaches are likely to better reflect changes in the forward-looking cost of providing the UCLL service than raw benchmarking.

19. We have no compelling reasons or evidence before us to believe that either the econometric adjustment approach or the indexing approach is clearly superior to the other for the purpose of updating UCLL monthly rental prices in this review. Therefore, the Commission has taken the mid-point of the econometric adjustment

and indexing approaches, which leads to a 3.85% reduction in the geographically averaged UCLL monthly rental price.

20. A 3.85% reduction is the Commission's best estimate, given the evidence before it, of the appropriate benchmark price under the initial pricing principle for the UCLL service. Therefore, the Commission considers that it is necessary to amend the UCLL price under section 30R of the Telecommunications Act.

21. Due to the modest nature of the price decrease, the Commission considers that a glide path is not required in this case.

UCLL connection charges

22. Revised connection charges have also been benchmarked as part of this review. Changes have also been necessary for these charges. The updated metallic path facility (MPF) new connection charges are:

    22.1 $155.10 for an individual new connection where a site visit is required (a 31.1% reduction from the current price)

    22.2 $70.46 for an individual new connection where no site visit is required (a 5.8% reduction from the current price)

    22.3 $52.84 bulk rate for 20 or more new connections at the same exchange where no site visit is required (a 5.8% reduction from the current price).

23. The updated MPF transfer charges are:

    23.1 $70.46 for an individual transfer (a 5.8% reduction from the current price)

    23.2 $52.84 bulk rate for 20 or more transfers at the same exchange (a 5.8% reduction from the current price).

Sub-loop UCLL and UBA without POTS prices

24. When the UCLL benchmarking review was initiated, the Commission noted that it would also update prices under the UBA and sub-loop services standard terms determinations that are affected by the UCLL benchmarking data update.

Sub-loop UCLL monthly rental prices

25. Urban, non-urban and geographically averaged monthly rental prices for the sub-loop UCLL service have previously been set as 60.4% of the corresponding full UCLL prices. 60.4% is the benchmarked proportion of sub-loop to full loop prices in jurisdictions where forward-looking cost-based access prices are available.

26. Given the changes to UCLL monthly rental prices, changes to the sub-loop UCLL monthly rental prices are also necessary.

27. Updated sub-loop UCLL monthly rental prices have been calculated by multiplying the updated UCLL monthly rental prices by 60.4%. The updated sub-loop UCLL monthly rental prices are:

27.1 $11.52 in urban areas

27.2 $21.26 in non-urban areas

27.3 $14.21 geographically averaged.

UBA without POTS

28. The Commission has previously determined that the UBA without POTS (naked UBA) uplift is to be set by reference to the geographically averaged UCLL price contained in the UCLL standard terms determination.[5] Changes to the geographically averaged UCLL price now automatically flow through to the naked UBA service for new lines.

Availability of the final pricing principle

29. A party may apply for a pricing review at the conclusion of the UCLL benchmarking review. The Commission considers that amendments to the UCLL prices resulting from this review still qualify as a determination under section 30M and section 30R of the Telecommunications Act, and therefore, are capable of a pricing review under section 42.

[5] Commerce Commission, Decision No. 739: *Final decision in relation to the review of the UCLL, UBA and Sub-loop Services standard terms determinations (STDs) for the purpose of implementing clause 4A of the Telecommunications Amendment Act 2011*, 24 November 2011.

Introduction

30. This document sets out the Commission's final decisions regarding the unbundled copper local loop (UCLL) benchmarking review. It contains updated monthly rental and connection charges for the UCLL service.[6]

The UCLL benchmarking review process

31. On 7 November 2007 the Commission published its standard terms determination for the designated service Telecom's unbundled copper local loop network (the UCLL STD).[7]

32. In August 2011 the Commission commenced a review (the UCLL benchmarking review), under section 30R of the Telecommunications Act (the Act), for the purpose of:

    32.1 updating the benchmark data set used in the UCLL STD to determine the monthly UCLL prices and UCLL connection charges

    32.2 updating prices under the UBA and Sub-loop Services STDs that are affected by the UCLL benchmark data update.

33. The benchmarking review was launched in addition to a separate section 30R review for the purpose of implementing clause 4A of subpart 1 of Part 1 of the Act, which had been initiated on 7 July 2011 (the clause 4A review).

34. On 9 September 2011 the Commission released a combined draft decision for the two reviews. In relation to the UCLL benchmarking review:[8]

    34.1 The Commission considered updating the benchmark set contained in the UCLL STD to identify current prices for **similar services** in **comparable countries** that use a **forward-looking cost-based** pricing method. However, an update of the benchmark set produced only two observations.[9] The Commission considered that using the prices observed in two jurisdictions was not sufficiently robust to set updated UCLL monthly rental and connection charges for New Zealand.

    34.2 Therefore, the Commission benchmarked price changes for those jurisdictions that had consistently applied a forward-looking cost-based pricing method at the time of the UCLL STD (in 2007) and at the present day (the indexing approach). This generated a sample of seven jurisdictions,

---

6 The updated geographically averaged UCLL monthly rental price automatically flows through to the UBA and UCLFS STDs.

7 Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007.

8 Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011, page 6.

9 A significant number of jurisdictions included in the 2007 UCLL STD benchmark set no longer have forward-looking cost-based prices. For example, US states no longer meet the "forward-looking cost-based" benchmarking requirement. See paragraphs 101 to 109 below.

where there was a trend in prices for the UCLL monthly rental service, and six jurisdictions, where there was a trend in prices for UCLL connection charges.

35. The Commission explained its wider concerns regarding the data available for UCLL benchmarking as follows:[10]

> The Commission considered other options, such as benchmarking actual prices (as opposed to percentage changes) or conducting a new benchmarking exercise. These alternative approaches, however, could potentially have lead to a significant change in UCLL prices in New Zealand driven primarily by a change in composition of jurisdictions in the benchmark set, rather a change in cost. In addition, there are only a limited number of jurisdictions that meet the same comparability criteria as was applied in the UCLL STD, which would increase the possibility of a change in UCLL prices being primarily driven by a change in the composition of the benchmarking set.

36. The Commission received submissions and cross-submissions on the draft decision and a conference was held on 27 October 2011.

37. At the conference, parties raised the following points.

37.1 TelstraClear argued that indexing is not appropriate.[11] Telecom stated that if the Commission changes its methodology, then extra consultation is required.[12]

37.2 Telecom suggested that the Commission should include US states in the benchmark set.[13]

37.3 Vodafone argued that the reduction in loop length resulting from cabinetisation should have a downwards impact on the forward-looking cost-based price for the UCLL service.[14]

38. On 4 November 2011 the Commission released a revised draft decision for consultation. In that draft, the Commission's view was that the two reviews should be separated, with:[15]

38.1 the clause 4A review to be completed before separation day

---

10 Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011, page 20, paragraph 66.

11 Commerce Commission, *Final transcript: UCLL and UBA Averaging and Section 30R Reviews Conference*, 27 October 2011, page 15, lines 10-18.

12 Commerce Commission, *Final transcript: UCLL and UBA Averaging and Section 30R Reviews Conference*, 27 October 2011, page 162, lines 2-11.

13 Commerce Commission, *Final transcript: UCLL and UBA Averaging and Section 30R Reviews Conference*, 27 October 2011, page 86, lines 18-24.

14 Commerce Commission, *Final transcript: UCLL and UBA Averaging and Section 30R Reviews Conference*, 27 October 2011, page 83-84, lines 15-3.

15 Commerce Commission, *Revised draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL and Sub-loop Services standard terms determinations and consequential changes to the UBA up-lift*, 4 November 2011, page 2, paragraph 2.

38.2 the UCLL benchmarking review to be completed after separation day.

39. The Commission released its final UCLL averaging decision on 24 November 2011. That decision confirmed that the clause 4A (averaging) and the benchmarking reviews were to be separated, with the benchmarking review (this review) to be completed after separation day.[16]

40. On 17 February 2012 the Commission released a discussion paper seeking views on a number of unresolved benchmarking issues that, having been raised at the October 2011 conference, were identified in the final UCLL averaging decision.[17] These issues included the impact of loop length on a forward-looking cost-based UCLL price and whether Australia and US states should be included in the benchmark set.

41. Submissions on the discussion paper were received on 9 March 2012. The following arguments were raised regarding the likely cost impact of average copper loop length.

41.1 Telecom submitted that, all other things being equal, shorter UCLL copper loops should result in lower overall costs.[18]

41.2 Network Strategies submitted that the cost of a local loop is dependent on the loop length.[19]

41.3 Covec submitted that a decrease in the average loop length, holding all other things equal, will result in a lower cost estimate from a forward-looking cost-model.[20]

42. On 4 May 2012 the Commission released a revised draft determination on the UCLL benchmarking review.[21] The revised draft decision proposed a geographically averaged UCLL price of $19.75, which represented a 20% drop from the price set in the 2007 UCLL STD. The Commission also proposed commencing a Schedule 3 investigation to consider amending the pricing principles for the UCLF service.

43. Submissions on the revised draft determination were received on 1 June 2012 and cross-submissions were received on 15 June 2012.

---

16 Commerce Commission, Decision No. 739: *Final decision in relation to the review of the UCLL, UBA and Sub-loop Services standard terms determinations (STDs) for the purpose of implementing clause 4A of the Telecommunications Amendment Act 2011*, 24 November 2011.

17 Commerce Commission, *Discussion document on the re-benchmarking of prices for Chorus's unbundled copper local loop service*, 17 February 2012.

18 Telecom, *Submission: UCLL re-benchmarking discussion paper*, 7 March 2012, page 2.

19 Network Strategies, *Re-benchmarking UCLL prices*, 9 March 2012, page 3.

20 Covec*, Re-benchmarking Chorus's UCLL service prices*, 9 March 2012, page 2.

21 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012.

44. On 17 August 2012 the Commission released a revised view on the need for a Schedule 3 investigation into the pricing principles for Chorus' UCLF service.[22] This document:

    44.1 set out the Commission's revised view that it no longer considered that there were reasonable grounds for a Schedule 3 investigation into the pricing principles for the UCLF service, because the UCLFS IPP, as currently drafted, requires the price for the UCLF service to be based on Chorus' full unbundled copper local loop network

    44.2 put forward a framework for considering the relationship between Chorus' local loop network, the UCLL service and the UCLF service.

45. On 31 August 2012, Chorus wrote to the Commission setting out changes to the average UCLL trench length per line between 2007 and 2012.[23] Chorus indicated that the average trench length per line had increased by 36% over this period. On 3 September 2012 the Commission wrote to parties advising that the trench length letter would be considered at the upcoming conference.

46. In response to the Chorus letter, TelstraClear wrote to the Commission objecting to the trench length being considered at the forthcoming conference, noting that the data had not been subject to examination by other parties.[24] TelstraClear's objection was maintained at the conference.[25]

47. After due consideration, the Commission has placed no weight on the Chorus trench length letter dated 31 August 2012 in this determination.

48. A conference on the revised draft determination was held on 19 and 20 September 2012. At the conference it was generally agreed amongst industry participants that:

    48.1 the relationship between average copper loop length and the forward-looking cost-based UCLL price is now unclear;[26] and

    48.2 a single price should apply for UCLL and UCLFS.[27]

Structure of this decision document

49. The key sections of this final decision document are summarised below.

---

22 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.

23 Chorus, *Changes to UCLL trench length per line between 2007 and 2012*, 31 August 2012.

24 TelstraClear, *RE: UCLL Chorus Letter & the UCLL Re-benchmarking Review Conference*, 13 September 2012.

25 Commerce Commission benchmarking review conference transcript, 19-20 September 2012, page 15.

26 See the discussion at paragraphs 296 to 307 below, and Commerce Commission benchmarking review conference transcript, 19-20 September 2012, pages 78 – 88.

27 For example, see pages 78-79 of the conference transcript, 19-20 September 2012.

49.1 **Determination framework:** Describes the statutory powers that the Commission is required to apply for the purpose of the UCLL benchmarking review.

49.2 **The 2007 UCLL standard terms determination:** Summarises the first implementation of the initial pricing principle (IPP) for the UCLL service, based on the UCLL STD which was released in November 2007.

49.3 **Applying the IPP for the 2012 UCLL benchmarking review:** Explains how we have applied each of the key components of the IPP: benchmarking against prices for similar services, in comparable countries, that use a forward-looking cost-based pricing method.

49.4 **Econometric adjustment approach:** Applies the econometric adjustment approach to updating UCLL monthly rental prices. The outcome of the econometric adjustment approach is presented.

49.5 **Indexing approach:** Applies the indexing approach to updating UCLL monthly rental prices. The outcome of the indexing approach is presented.

49.6 **Conclusion on updated UCLL monthly rental prices:** Reaches a final view on updated UCLL monthly rental prices for this review. Relativity between UCLL and UBA is also considered.

49.7 **Loop length and the link between UCLL and UCLFS prices:** Explains the link between the UCLL and UCLF services, including the relationship with average copper loop length. The reasons for the Commission's view that it is appropriate to apply a single price for the UCLL and UCLF services are explained.

49.8 **UCLL connection charges:** Sets updated transfer, bulk transfer and new connection prices based on benchmarking of connection charges.

49.9 **Sub-loop UCLL and UBA without POTS prices:** Sets out updated sub-loop UCLL and UBA without POTS monthly rental prices resulting from the UCLL benchmarking review.

Determination framework

Purpose

51. This section describes the statutory powers that the Commission is required to apply in the UCLL benchmarking review.

The service description

52. This determination concerns the designated access service of Chorus's unbundled copper local loop network as set out in subpart 1 of Part 2 of Schedule 1 of the Act. The service is defined as follows:

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)
Conditions:	Nil
Access provider:	Chorus
Access seeker:	A service provider who seeks access to the service, except, until 3 years after separation day, Telecom
Access principles:	The standard access principles set out in clause 5
Limits on access principles:	The limits set out in clause 6
Initial pricing principle:	Benchmarking against prices for similar services in comparable countries that use a forward-looking cost-based pricing method
Final pricing principle:	TSLRIC
Requirement referred to in section 45 *or final pricing principle:*	Nil
Additional matters that must be considered regarding application of section 18:	The Commission must consider relativity between this service and Chorus's unbundled bitstream access service (to the extent that the terms and conditions have been determined for that service)

Statutory requirements for this determination

53. The Commission makes this determination under section 30R of the Act. Section 30R provides as follows:

> **30R Review of standard terms determination**
>
> (1) The Commission may, on its own initiative, commence a review, at any time, of all or any of the terms specified in a standard terms determination.
>
> (2) The Commission may replace a standard terms determination or vary, add, or delete any of its terms, if it considers it necessary to do so after conducting a review.
>
> (3) In exercising the power conferred by subsection (2), the Commission may specify how and when a replacement standard terms determination, or a variation, addition, or deletion of terms specified in the determination, takes effect in relation to—
>
> (a) the initial standard terms determination:
>
> (b) any relevant residual terms determination.
>
> (4) The Commission may conduct a review in the manner, and within the time, that it thinks fit.
>
> (5) The Commission must—
>
> (a) consult all parties to the determination on the review; and
>
> (b) give public notice of the commencement of the review; and
>
> (c) include in the public notice under paragraph (b) the closing date for submissions; and
>
> (d) give public notice of the result of the review.

54. In particular, section 30R(2) provides a broad power to “replace a standard terms determination or vary, add, or delete any of its terms” if the Commission considers it “necessary” to do so following a section 30R review. We consider that in this context necessary means “reasonably necessary”, rather than essential.

55. Given sections 18 and 19 (discussed below), the Commission considers that a change will be “necessary” under section 30R if it is reasonably necessary to achieve the purpose of the review, or to otherwise best achieve the purpose of the Act under section 18.

Sections 18 and 19

56. Section 19 of the Act directs the Commission to consider, when making a determination, to satisfy itself that the determination best gives, or is likely to best give, effect to the purpose set out in section 18. Section 19 states:

19 Commission and Minister must consider purpose set out in section 18 and additional matters

If the Commission or the Minister (as the case may be) is required under this Part or any of [Schedules 1, 3, and 3A] to make a recommendation, determination, or a decision, the Commission or the Minister must—

(a) consider the purpose set out in section 18; and

(b) if applicable, consider the additional matters set out in Schedule 1 regarding the application of section 18; and

(c) make the recommendation, determination, or decision that the [Commission] or Minister considers best gives, or is likely to best give, effect to the purpose set out in section 18.

57. Section 18 of the Act describes the purposes of Part 2 and Schedules 1 to 3 as follows:

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.

58. The purpose statement in section 18 was amended by the Amendment Act with the inclusion of a new subsection 2A. Under subsection 2A, the Commission is required to consider the incentives to innovate that exist for, and the risks faced by, investors in ‘new telecommunication services’. These matters must be considered when determining whether or not, or the extent to which, competition in telecommunications markets for the long-term benefit of end-users of telecommunication services within New Zealand is promoted.

Telecom cannot be an Access Seeker for UCLL

59. The description of the UCLL service explicitly provides that Telecom cannot be an access seeker of the UCLL service until three years after separation day. This access prohibition does not apply to any other party.

Relativity

60. The service description for the UCLL service requires that the Commission must consider relativity between the UCLL service and the UBA service (to the extent that terms and conditions have been determined for these services). Relativity considerations are discussed in this decision at paragraphs 278 to 282.

Availability of the final pricing principle

61. A question that has arisen during the course of the UCLL benchmarking review is whether a party may apply for a pricing review of the UCLL price that is determined under a section 30R review. This issue arises because of the requirements of section 42 of the Act which provides that a pricing review is specifically made available in respect of "a determination made under section 27 or section 30M regarding the price payable...".[28]

62. During the process for the clause 4A UCLL averaging review, the Commission received a number of submissions on the availability of the final pricing principle (FPP). The Commission did not receive any submissions raising new issues regarding this matter during the UCLL benchmarking review. The submissions outlined below are those that were made during the clause 4A averaging review.

63. TelstraClear requested that the Commission undertakes its benchmarking review as a reconsideration under section 59 of the Act if the Commission is concerned that the FPP is not available for a review under section 30R.[29] TelstraClear submitted that under a reconsideration the Commission would re-apply section 30M and so trigger the right to a pricing review under section 42 of the Act.

64. TelstraClear also argued that the right to an FPP is reactivated following a fresh benchmarking exercise by virtue of an implied power. Specifically, it considered that public notice of the new UCLL price under section 30R(5)(d) has the same effect as public notice of the STD under section 30M(c).[30]

65. Chorus submitted that the application of the FPP should be available if necessary, but maintained that the only way to achieve this within the wording of the Act is to re-issue the UCLL STD under section 30M, which requires the STD process to be

---

[28] Section 42(1) states that "if a determination is made under section 27 or section 30M regarding the price payable for a designated access service, a party to the determination may apply for a review of that part of the determination that relates to the price to be paid for the service".

[29] TelstraClear, *Submission on the revised draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL and sub-loop service standard terms determinations and consequential changes to the UBA up-lift*, 11 November 2011, page 6.

[30] TelstraClear's opening statement at the conference, 27 October 2011, page 2.

followed.[31] Chorus noted that it did not agree with TelstraClear's reading of section 59(3) of the Act, that reconsideration under section 59 could trigger the ability to apply for a pricing review.

66. Vodafone submitted that a party could apply for a pricing review of a price that is changed by a review under section 30R.[32] Vodafone submitted that where a section 30R review changes a fundamental term, such as a core price, the STD is replaced, giving rise to a new section 30M determination that is capable of a pricing review.[33]

67. Although it is not necessary for the Commission to reach a final view for the purposes of this determination, the Commission anticipates that parties may be assisted by knowing the Commission's view. The Commission considers that a party may apply for a final pricing review of the UCLL price under section 42 at the conclusion of the UCLL benchmarking review. This is because a section 30M determination that is amended or replaced under section 30R still qualifies as a 'section 30M determination' that is capable of review under section 42.

68. Further support for this view is found in the fact that any changes introduced to the section 30M determination through section 30R must follow the statutory framework for standard terms determinations.[34] For example, the Commission could not review its UCLL determination and make changes that ignored the requirements of sections 30O and 30P, or which added a time limit contrary to section 30Q. Therefore, a determination that is amended or replaced under section 30R is capable of founding a pricing review under section 42.

69. The Commission will give public notice of its determination under section 30R(5)(d) which will also qualify as public notice under section 30M(c). In addition, the Commission has also adopted parts of the standard terms determination process during the UCLL benchmarking review given that section 30R(4) allows the Commission to conduct a review in the manner, and within the time, that it thinks fit.

70. Given that section 59 reconsiderations can only be undertaken if requested by a party, the Commission cannot undertake a reconsideration of its own volition.

---

31 Chorus, *Cross-submission on Commission UCLL Revised Draft UCLL Pricing Review Decision*, 16 November 2011, page 4.

32 UCLL and UBA Averaging and Section 30R Reviews Conference held on 27 October 2011, conference transcript at page 60, lines 13 to 33.

33 Ibid.

34 Sections 30C to 30M of the Act.

The 2007 UCLL standard terms determination

Purpose

71. This section summarises the first implementation of the IPP for the UCLL service, based on the UCLL STD which was released in November 2007. The approach adopted in the 2007 UCLL STD provides important context for the current UCLL benchmarking review conducted under section 30R of the Act, because we are updating the prices that were originally set in 2007.

Benchmarking approach in the 2007 UCLL STD

72. In the 2007 UCLL STD the Commission used a "peer group" approach for benchmarking UCLL prices. The general approach adopted when applying the IPP was to:[35]

    72.1 identify countries in which similar services were provided

    72.2 eliminate countries that did not use a forward-looking cost-based pricing method (FLCB)

    72.3 select comparability criteria to identify comparable countries within the group which used FLCB (and provided similar services)

    72.4 apply benchmarking to that group of comparable countries.

73. The Commission noted that a major theme in submissions on the draft STD related to whether an econometric approach or a peer group approach should be employed when applying the IPP. The Commission concluded that:[36]

    > …an econometric approach sits within its discretion but is of the view that the plain meaning of the IPP leads to a preference for the peer group approach.

74. Although the peer group approach was used to set the benchmarked UCLL prices, econometric benchmarking was used as a cross-check on the results for the monthly rental price.

Approach to comparability criteria

75. In the 2007 UCLL STD, population density, urbanisation and teledensity were identified as key cost drivers for the UCLL service by econometric modelling.[37]

76. Based on this econometric analysis, population density, urbanisation and teledensity were used as comparability criteria to exclude countries where UCLL costs were

[35] Commerce Commission, Decision No. 609: *Standard Terms Determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, page 40, paragraph 141.
[36] Commerce Commission, Decision No. 609: *Standard Terms Determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, page 40, paragraph 137.
[37] Commerce Commission, Decision No. 609: *Standard Terms Determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, pages 45-46, paragraphs 157-164.

likely to differ significantly from New Zealand.[38] The comparability criteria that were applied were:

76.1 urbanisation of greater than 60%

76.2 population density of less than 30 people per square kilometre

76.3 teledensity between 20% and 60%.

77. Only those jurisdictions that met the comparability criteria above were included in the final benchmark set.

Results of the 2007 peer group benchmarking

78. The Commission identified 66 jurisdictions that set prices using a forward-looking LRIC methodology. This included 13 European countries[39], Australia, Canada and 51 US States[40].

79. 10 jurisdictions remained after applying the comparability criteria. Prices for these 10 jurisdictions are summarised in Table 1 below.

Table 1: Benchmarking data set from the UCLL STD (November 2007)[41]

Country	Urban Pop	Teledensity	Pop Density	UCLL rate (NZ$)
Idaho	77%	54%	19	$32.36
Kansas	83%	52%	29	$21.66
Nebraska	88%	41%	22	$28.04
New Mexico	83%	54%	20	$34.62
North Dakota	83%	43%	19	$26.76
South Dakota	77%	46%	13	$30.17
Australia	88%	50%	3	$21.82
Finland	61%	40%	14	$20.33
Norway	77%	46%	14	$18.93
Sweden	84%	58%	20	$16.30
New Zealand	86%	43%	15	
Range used in draft STD	X>60%	20%<X<60%	X<30	

80. The median of this benchmark set was selected in order to determine a geographically averaged UCLL rate of $24.29. This price was then de-averaged into

38 Commerce Commission, Decision No. 609: *Standard Terms Determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, page 46, paragraph 164.

39 The 13 European countries were: Austria, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Netherlands, Norway, Spain, Sweden and the UK.

40 50 US states and the District of Columbia.

41 Commerce Commission, Decision No. 609: *Standard Terms Determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, page 47, table 4.

urban and non-urban UCLL monthly rental prices of $19.84 and $36.63 respectively.[42]

2011 UCLL averaging decision

81. The 2011 amendments to the Act required the Commission to set a geographically averaged UCLL price, which will take effect three years after separation day. The current geographically averaged UCLL monthly rental price is $24.46, as determined in the UCLL averaging decision which was released in November 2011.[43]

82. The current geographically averaged price of $24.46 was calculated as a weighted average of the urban and non-urban prices ($19.84 and $36.63 respectively), using an updated proportion of urban and non-urban lines.[44]

---

[42] See paragraphs 254 to 264 of the Final UCLL STD for further discussion of the de-averaging methodology.

[43] Commerce Commission, Decision No. 739: *Final decision in relation to the review of the UCLL, UBA and Sub-loop Services standard terms determinations (STDs) for the purpose of implementing clause 4A of the Telecommunications Amendment Act 2011*, 24 November 2011.

[44] The updated proportions of urban and non-urban lines were 72.45% and 27.55% respectively. See paragraph 276 below.

Applying the IPP for the 2012 UCLL benchmarking review

Purpose

84. This section describes the approach to applying the IPP for the current UCLL benchmarking review. It explains how the Commission has applied each of the key components of the IPP: benchmarking against prices for similar services, comparable countries and a forward-looking cost-based pricing method.

The initial pricing principle

85. A two-part tariff structure applies to the UCLL service. There is a one-off connection charge (reflecting the costs of setting up the service) and a recurring monthly rental charge.[45]

86. The Commission is required to set the monthly rental and connection charges for the UCLL service by benchmarking against prices for local loop unbundling in other jurisdictions. The IPP for the UCLL service is:

> Benchmarking against prices for similar services in comparable countries that use a forward-looking cost-based pricing method

87. Prices for the UCLL service were set five years ago, as part of the UCLL standard terms determination which was released in November 2007.[46] The purpose of the UCLL benchmarking review is to update the benchmarking data used to determine UCLL monthly rental and connection charges.

88. The three key components of the IPP are benchmarking against prices for similar services, in comparable countries, that use a forward-looking cost-based pricing method. The high-level approach adopted by the Commission when applying the IPP is:

    88.1 **Similar services:** identify countries in which regulated access to local loop unbundling is available

    88.2 **Forward-looking cost-based pricing method:** eliminate those countries that do not use a forward-looking cost-based pricing method

    88.3 **Comparable countries:** apply comparability criteria to eliminate countries that are likely to have UCLL costs that differ significantly from New Zealand.

Similar services

89. The first step in establishing the benchmark set is to identify countries in which similar services are available.

---

[45] Only the core monthly rental and connection charges are updated as part of the UCLL benchmarking review. Sundry charges are not included.

[46] Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007.

90. The UCLL service enables access seekers to rent the copper local loop between the external termination point at the end-user's premises and the main distribution frame in the local telephone exchange.

91. Local loop unbundling is a relatively standardised service and service descriptions do not vary significantly across countries. Accordingly, those countries where regulated access to local loop unbundling is available have been identified as the starting point for establishing the benchmarking data set.

Forward-looking cost-based pricing method

92. Having identified countries where similar services are available, those countries that do not use a forward-looking cost-based pricing method have been eliminated.

93. The following criteria have been used to identify UCLL prices for countries that apply a forward-looking cost-based pricing methodology:

    93.1 a forward-looking LRIC modelling approach is used

    93.2 updated and recent information on UCLL rates is available

    93.3 unbundling is operational and loops have been unbundled.

94. These are the same forward-looking cost-based benchmarking criteria that were applied in both the UCLL STD[47] and the revised draft UCLL benchmarking review determination.[48]

95. 13 countries meeting the forward-looking cost-based benchmarking criteria have been identified. These countries are Belgium, Denmark, Sweden, Romania, Greece, Slovenia, Italy, Switzerland, Germany, Cyprus, Czech Republic, Turkey and Macedonia.

96. Application of the forward-looking cost-based benchmarking criteria is summarised in Attachment A.

Countries added since the revised draft determination

97. Macedonia and Turkey have been added to the list of countries meeting the forward-looking cost-based benchmarking criteria in response to submissions on the revised draft determination.

98. Vodafone and Network Strategies both submitted that Macedonia uses a forward-looking LRIC approach.[49] CEG agreed that a BU-LRIC approach is used in Macedonia in their cross-submission.[50]

---

[47] See Commerce Commission, Decision No. 609: *Draft standard terms determination for the designated service Telecom's unbundled copper local loop network*, 31 July 2007, paragraphs 61-66. The same criteria were applied in the Final UCLL STD dated 7 November 2007.

[48] Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, page 25, paragraph 100.

99. Vodafone submitted that the Turkish regulator has used a bottom-up LRIC model to set its UCLL price.[51] In their cross-submission, Network Strategies agreed that Turkey meets the benchmarking criteria.[52]

100. The Commission agrees that both Macedonia and Turkey use a forward-looking cost-based pricing methodology to set the price for local loop unbundling.

Exclusion of US states from the benchmarking data set

101. In the revised draft determination, the Commission concluded that unbundled network element – loop (UNE-L) prices for US states do not meet the forward-looking cost-based benchmarking criteria. The Commission stated:[53]

> UNE-L prices in US states were originally set using a forward-looking total element long run incremental cost (TELRIC) methodology. However, we have been unable to identify any US states that have updated their TELRIC UNE-L prices since December 2007.
>
> The lack of updates to US prices strongly suggests that these prices are not up-to-date and no longer reflect *forward-looking* costs. A price that is set in 2007 will not value inputs using current prices.

102. The Commission noted that regulatory changes in the US have resulted in a significant reduction in the use of UNEs since 2005, with only 3.1% of US lines using the service in June 2010.[54]

103. Sapere argued that "…the fact that these prices have been stable over this period is not of itself evidence that they do not continue to be a reasonable reflection of forward looking costs to deliver this service".[55]

104. However, Network Strategies argued that the US UNE-L prices cannot reflect forward-looking costs and are inappropriate for benchmarking UCLL costs today:[56]

> …no new evidence is provided by Sapere Research Group in this report to support its claim that US prices are a reasonable reflection of forward-looking costs. If anything, the material presented simply highlights the fact that the rates are outdated and no recent

49 Vodafone, *Submission on the revised draft determination on the benchmarking review for the unbundled copper local loop service (UCLL)*, 1 June 2012, page 13, paragraphs 33-34; Network Strategies, *Benchmarking review for the unbundled copper local loop service: Comments on the revised draft determination*, 31 May 2012, pages 5-7.

50 CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, page 22, paragraph 89.

51 Vodafone, *Submission on the revised draft determination on the benchmarking review for the unbundled copper local loop service (UCLL)*, 1 June 2012, page 13, paragraph 32.

52 Network Strategies, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2012, page 27.

53 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, page 28, paragraphs 116-117.

54 For further detail see Appendix 2, Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011.

55 Sapere Research Group, *Comments on benchmarking UCLL prices*, 1 June 2012, page 1, paragraph 2.

56 Network Strategies, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2012, pages 28-29.

> model updates, or even a review of the existing rates, have been undertaken. Sapere Research Group misses the point entirely that rates that are several years old cannot represent forward-looking costs. Cost model input values change over time, and therefore it is standard regulatory practice to update models regularly to reflect such changes or review models to ensure that they continue to reflect forward-looking cost-based rates.

105. Similarly, Covec noted that "a lack of update is not the same thing as an updated price that was unchanged" and that "the rapid decline in the use of UNE-L in the US means that incentives of operators to request updated prices are weak".[57]

106. Vodafone submitted that "we cannot see a case for including the US states in the benchmark set as we don't believe that it is possible to collect UNE-L prices for US states that are current and represent only a TSLRIC proxy".[58]

107. The Commission's view remains that US states do not comply with the forward-looking cost-based requirement, because UNE-L prices fail to meet the "forward-looking LRIC" and "updated and recent" requirements of the benchmarking criteria.

108. However, excluding US states creates a potential source of downwards bias in the benchmarking data compared to the 2007 UCLL STD. In the 2007 STD, the Commission noted that "…UCLL rates in the US appear to be consistently higher than the non-US observations" for reasons that were not clear.[59] Therefore, excluding these relatively high US prices from the benchmarking data set will lead to a lower price than would have resulted if the US states were included.

109. The expected downwards bias associated with excluding US states from the benchmark set is addressed later in this determination.[60]

Comparable countries

110. The IPP requires the Commission to identify those countries within the benchmarking data set that are comparable to New Zealand. The comparability requirement is an important part of the IPP, as it ensures that countries which have UCLL costs that are likely to differ significantly from New Zealand are excluded from the benchmarking data set.

111. As noted earlier, population density, urbanisation and teledensity were used as comparability criteria in the 2007 UCLL STD. Data on population density, urbanisation and teledensity for the 13 countries meeting the forward-looking cost-based benchmarking criteria is included in Table 2 below.

---

57 Covec, *UCLL benchmarking review: Cross-submission*, 15 June 2012, page ii.

58 Vodafone, Cross-submission to the Commerce Commission: *Revised draft determination on the benchmarking review for the unbundled copper local loop service (UCLL)*, 15 June 2012, pages 10-11, paragraph 32.

59 Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, page 45, paragraph 160.

60 See in particular paragraphs 175 - 181 and 413 - 421 below.

Table 2: Data on comparability criteria

Country	Population density	Urbanisation	Teledensity
Macedonia	80.1	59.3%	20.0%
Belgium	350.9	97.5%	43.3%
Denmark	128.8	86.9%	47.4%
Greece	86.1	61.4%	45.8%
Romania	90.1	52.8%	20.9%
Sweden	20.8	85.2%	52.5%
Slovenia	100.2	49.9%	44.9%
Switzerland	185.6	73.7%	57.1%
Turkey	92.8	71.5%	22.3%
Italy	201.0	68.4%	35.5%
Germany	230.5	73.9%	55.5%
Czech Republic	133.0	73.4%	22.9%
Cyprus	119.3	70.5%	37.4%
New Zealand	16.1	86.2%	42.8%

Source for urbanisation data

112. The Commission has used urbanisation data sourced from the United Nations (UN).[61]

113. Vodafone submitted that "the OECD has put considerable effort into refining its measures of urbanisation to try and get consistency across countries so its method may be a more accurate estimate of urbanisation than the UN's".[62] Vodafone also argued that due to differing urbanisation rates reported by the UN and the OECD, the Commission should err on the side of inclusion when applying comparability criteria based on urbanisation, and retain Macedonia, Romania and Slovenia in the benchmark set.[63]

114. In response, Chorus stated that submissions arguing that the Commission should relax the urbanisation criterion "…lead the Commission down a path which is contrary to its requirements to benchmark prices against comparable countries and should be rejected on that basis. Chorus argued that "retaining the urbanisation criterion is essential to achieve some level of comparability of the benchmark set".[64]

---

61 United Nations*, World urbanization prospects: The 2011 revision*, March 2012.

62 Vodafone, *Submission on the revised draft determination on the benchmarking review for the unbundled copper local loop service (UCLL)*, 1 June 2012, page 12, paragraph 30.

63 Vodafone, *Submission on the revised draft determination on the benchmarking review for the unbundled copper local loop service (UCLL)*, 1 June 2012, pages 12-13, paragraph 31.

64 Chorus, *Cross-submission in response to the revised draft determination on the benchmarking review for the unbundled copper local loop service*, 15 June 2012, page 14, paragraphs 54-57.

115. Further, CEG submitted that switching to OECD urbanisation data would not improve the robustness of the analysis because:[65]

    115.1 whilst the OECD classification provides for a homogenous definition of areas as rural and urban across jurisdictions, the size and nature of these areas are not homogenous across jurisdictions; and

    115.2 the differences in the size and nature of the areas are highlighted by the fact that New Zealand (which has only 14 areas) has no areas defined as rural.

116. The Commission acknowledges the concerns Vodafone has raised regarding the variability in how urbanisation is measured. However, for the reasons outlined by CEG, it is not clear that OECD urbanisation data provides a more accurate measure. Therefore, the Commission has continued to use urbanisation data sourced from the UN.

Applying the comparability criteria from the 2007 UCLL STD

117. As described in paragraph 76 above, the comparability criteria applied in the 2007 UCLL STD were:

    117.1 urbanisation of greater than 60%

    117.2 population density of less than 30 people per square kilometre

    117.3 teledensity between 20% and 60%.

118. Of the 13 countries that currently meet the forward-looking cost-based benchmarking criteria, Sweden is the only one that meets these three criteria.

119. A benchmarking data set comprised of only one country is not sufficient to set updated UCLL prices in the context of this review. This is highlighted by the fact that the current Swedish price of $16.44:

    119.1 represents a 33% decrease from the current geographically averaged UCLL monthly rental price of $24.46; and

    119.2 is approximately 9% higher than the 2007 Swedish price of $15.09.[66]

120. In these circumstances, applying the comparability criteria from the UCLL STD would lead to a significant price reduction that is driven by limiting the benchmark set to one country, rather than necessarily reflecting changes in forward-looking costs.

121. Therefore, applying the 2007 comparability criteria does not result in a satisfactory "peer group" of countries with forward-looking cost-based UCLL prices to benchmark against. The majority of countries are excluded due to failing to satisfy the population density comparability criterion.

---

65 CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, page 12, paragraph 42.

66 See Table 7 below.

122. In response to this comparability problem, the Commission has considered three possible approaches to updating UCLL prices. These approaches all involve relaxing the population density comparability criterion.

122.1 **The raw benchmarking approach:** Under this approach the population density comparability criterion is removed, to ensure that a sufficiently large list of benchmarked countries is available. No adjustment is made for the expected downwards bias associated with removing the population density comparability criterion and excluding US states.

122.2 **The econometric adjustment approach:** This approach uses the econometric equation developed for the 2007 UCLL STD to adjust (normalise) the raw benchmarking data. This approach is intended to correct for the expected downwards bias resulting from removing the population density comparability criterion and excluding US states. The econometric adjustment approach was adopted in the revised draft decision.[67]

122.3 **The indexing approach:** This approach involves benchmarking price trends for those jurisdictions that consistently applied a forward-looking cost-based pricing method at the time of the UCLL STD (in 2007) and at the present day. This approach was adopted in the draft UCLL averaging decision (ie the September 2011 draft decision).[68]

The raw benchmarking approach

123. Under the raw benchmarking approach, the population density comparability criterion is removed to ensure that a sufficiently large benchmarking dataset is available. WIK-Consult has previously advised that population density, when measured at the national level, is of little relevance when assessing UCLL cost differences between countries.[69]

124. In the revised draft determination, the Commission did not apply the raw benchmarking approach because it was concerned that removing the population density criterion would result in a benchmark set that would be biased downwards.[70]

125. In response to the revised draft determination, some parties argued that no adjustment for population density is required. Rather, they submitted that the “raw” prices for countries meeting the urbanisation and teledensity criteria should be benchmarked.

126. For example, TelstraClear submitted:[71]

67 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012.

68 Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011.

69 WIK-Consult, *UCLL cost drivers and comparability criteria*, 27 April 2012, pages 19-21.

70 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, paragraphs 156-161 and 195-205.

> The regression model used by the Commission to adjust for the discrepancies in population density is fundamentally flawed. We do not believe that the Commission needs to adjust prices in this manner.

127. Network Strategies submitted that "…population density, in particular, is at best a weak cost driver, and as such should be completely discarded from the analysis".[72]

128. Covec submitted that there is no theoretical support for adjusting for population density in the way implemented in the revised draft determination:[73]

> …the Commission has decided to make an adjustment based on observed national average population density, without any information about how average population density relates to disaggregated measures of population density, and despite being advised that average population density is irrelevant. Therefore, in our view, the Commission's theoretical justifications for the population density adjustment are not valid.

129. Vodafone argued that the "simple unadorned benchmark" should be used, arguing that the use of the 2007 econometric model to adjust the benchmarked prices "…is statistically questionable".[74]

130. The Commission had already considered the raw benchmarking approach in its September 2011 draft decision. The Commission explained its concerns at that time as follows:[75]

> The Commission considered other options, such as benchmarking actual prices (as opposed to percentage changes) or conducting a new benchmarking exercise. These alternative approaches, however, could potentially have lead to a significant change in UCLL prices in New Zealand driven primarily by a change in composition of jurisdictions in the benchmark set, rather than a change in cost. In addition, there are only a limited number of jurisdictions that meet the same comparability criteria as was applied in the UCLL STD, which would increase the possibility of a change in UCLL prices being primarily driven by a change in the composition of the benchmarking set.

131. In response to the submissions on the revised draft and discussion at the September 2012 conference, the Commission reconsidered the raw benchmarking approach. However, we continue to have the same concerns described in the quotation at paragraph 130 above.

---

71 TelstraClear, *Submission to the Commerce Commission on the revised draft determination on the benchmarking review for the unbundled copper local loop service*, 1 June 2012, page 2, paragraph 3(a).

72 Network Strategies, *Benchmarking review for the unbundled copper local loop service: Comments on the revised draft determination*, 31 May 2012, page i.

73 Covec, *Unbundled copper local loop service benchmarking review: Response to revised draft determination*, 31 May 2012, page 4, paragraph 28.

74 Vodafone, *Submission on the revised draft determination on the benchmarking review for the unbundled copper local loop service (UCLL)*, 1 June 2012, page 14, paragraph 38.

75 Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011, page 20, paragraph 66.

132. Specifically, raw benchmarking does not adequately apply the comparable countries requirement of the IPP in the context of this review.

132.1 Due to the inclusion of high density countries and the exclusion of US states, the Commission considers that the raw benchmarking approach results in a benchmark set that is biased downwards.

132.2 The outcome under this the raw benchmarking approach is a nominal reduction in the UCLL monthly rental price of approximately 30%. The 30% reduction is driven by the inclusion of countries in the benchmark set that did not meet the comparability criteria in the 2007 UCLL STD and the exclusion of US states.

133. The Commission's view remains that removing the population density comparability criterion is likely to result in a benchmark set that is biased downwards. New Zealand's population density is lower than all of the countries in the benchmarking data set. With the exception of Sweden, all remaining countries have a population density over four times higher than New Zealand.

134. As noted in the revised draft determination, the econometric model in the 2007 UCLL STD found that population density, urbanisation and teledensity were all statistically significant explanatory variables:[76]

> To the extent that a low population density masked customer clustering in urban areas, the multiple regression used in the UCLL STD would capture this effect through the combined impact of population density, urbanisation and teledensity. Intuitively, it is reasonable to expect that countries with identical urbanisation and teledensity rates, but vastly different population densities, would on average exhibit different UCLL costs.

135. In their cross-submission, CEG supported the view that an adjustment for population density is appropriate. They argued that "…there is a reasonable basis upon which to conclude that average density measures provide an adequate proxy for disaggregated density measures" and "…combined with urbanisation, average population density measures are a very close proxy for disaggregated density measures".[77]

136. CEG agreed with WIK and Covec that reliance upon robust disaggregated population density information is preferable to using average population density for the purpose of making adjustments to the benchmarked prices.[78] However, they noted that no-one has identified a robust basis upon which such an adjustment could be made.

137. CEG submitted that "the absence of a 'first-best' option does not in general mean that it is inappropriate to use a 'second-best' alternative".[79] Rather, CEG argued that

[76] Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, page 36, paragraph 158.
[77] CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, page 16, paragraph 61.
[78] CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, page 13, paragraph 49.
[79] CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, page 13, paragraph 50.

there are three important reasons why population density should be included in a normalisation adjustment.[80]

137.1 The 2007 regression analysis found that average population density, along with urbanisation and teledensity, were all significant in explaining forward-looking cost-based UCLL prices.

137.2 Average population density, in combination with other indicators such as urbanisation, can still provide information that is relevant to determining UCLL prices.

137.3 There is some evidence that national density measures are quite effective by themselves, and still more in combination with urbanisation, in explaining similar variations that would be explained by more disaggregated measures of density.

138. As noted above, the 30% nominal price reduction under the raw benchmarking approach is driven by the inclusion of countries in the benchmark set that did not meet the comparability criteria in the 2007 UCLL STD and the exclusion of US states. Specifically, excluding US states drives a significant portion of the reduction.

138.1 As an illustration, if the US states were excluded from the 2007 benchmarking data set, and only the urbanisation and teledensity comparability criteria were applied, the median of the benchmark set would have been $18.93.[81] This compares to the price of $24.29 that was actually set in the 2007 UCLL STD.

138.2 Similarly, of the 10 countries in the 2012 raw benchmarking data set (see Table 11 in Attachment B), five were listed as using a forward-looking cost-based pricing method in the 2007 UCLL STD data set.[82] The median price for these five countries in 2007 was $16.30.[83]

139. While the failure to adequately apply the comparable countries requirement of the IPP in the context of this review on its own rules out raw benchmarking, we also believe that section 18(2A) of the Act is an additional relevant consideration regarding the raw benchmarking approach. Parliament has reiterated the need for the Commission to consider the incentives on investors in new telecommunications services in promoting the long term interests of end-users.[84] We believe that this favours applying regulation in a predictable way, and avoiding unnecessary regulatory shocks.

---

80 CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, pages 14-16, paragraphs 51-61.

81 The median of $19.93 is based on the original 2007 data set, not including the correction to the 2007 PPP rates discussed in paragraphs 161 to 163 below.

82 These five countries are Denmark, Germany, Greece, Czech Republic and Sweden.

83 The median of $16.30 is based on the original 2007 data set, not including the correction to the 2007 PPP rates discussed in paragraphs 161 to 163 below.

84 In saying that, the Commission notes that section 18(2A) is explicitly included “for the avoidance of doubt”, and therefore was not intended to substantially change Commission’s task under section 18.

140. Regulatory predictability favours requiring strong evidence before abandoning, after only five years, the comparability criteria developed with substantial consultation and analysis in 2007. This is particularly so given that this is a review conducted under section 30R of the Act.

141. Therefore, the Commission has rejected raw benchmarking for the purposes of this review. Further detail on the raw benchmarking approach is included in Attachment B.

142. The econometric adjustment and indexing approaches, in contrast to raw benchmarking, address the expected downwards bias resulting from removing the population density comparability criterion and excluding US states. Therefore, in the context of this UCLL benchmarking review, the Commission considers that these two approaches are more reliable than the raw benchmarking approach.

The econometric adjustment approach

143. In the revised draft determination the Commission moved away from the indexing approach. This change in view took into account evidence that there had been a material shortening of the average copper loop length for lines available under the UCLL STD. It was argued that the reduction in average copper loop length indicated:

143.1 a reduction in forward-looking UCLL costs potentially of a similar order of magnitude to the percentage reduction in line length;[85] and

143.2 that the network to which the UCLL STD applied was now more comparable to European countries' networks (including countries with high population densities) than was the case when the Commission determined the 2007 UCLL STD.[86]

144. In the revised draft determination, the Commission stated that:[87]

> The reason the Commission used an indexing approach in the draft UCLL averaging decision was the limited number of countries that met the benchmarking criteria under the re-benchmarking approach. This was because very few countries met the population density comparability criterion from the UCLL STD.

145. If population density was removed as a comparability criterion, a dataset of nine countries was available for benchmarking UCLL monthly rental prices. The Commission noted that:[88]

---

85 For example, see WIK-Consult, *UCLL cost drivers and comparability criteria*, 27 April 2012, page 17.

86 Vodafone, *Submission to the Commerce Commission: Review of the initial pricing principle and updating of the unconditioned local loop service (UCLL)*, 3 October 2011, page 23.

87 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, page 22, paragraph 86.

88 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, page 22, paragraphs 87-88.

145.1 it was argued by TelstraClear and Vodafone at the 2011 UCLL averaging conference that relaxing the comparability criteria was an option available to the Commission;[89] and

145.2 it had received advice from WIK-Consult that population density alone, when measured at the national level, is of little relevance when assessing UCLL cost differences between countries.

146. Although the Commission decided to remove the population density comparability criterion, it remained concerned that this could result in a biased benchmarking data set:[90]

> …the Commission has some concerns regarding removing the population density criterion. WIK (and the Australian Productivity Commission) have not stated that population density is not a cost-driver for the UCLL service. Rather, they have noted that national average population density can mask the degree of scattering or clustering of customers. The true population distribution will be better reflected by using more disaggregated measures of population density.
>
> …The Commission expects that there is likely to be some remaining downwards bias in the benchmark set resulting from removing the population density comparability criterion. As noted earlier, New Zealand's population density is lower than all of the countries in the benchmark set.

147. Therefore, the econometric model from the 2007 UCLL STD was used to "normalise" the benchmarked prices. Normalising the benchmarks was intended to remove the predicted effect of differences in population density, teledensity and urbanisation on the benchmarked prices.

148. To account for the New Zealand's average loop length, which was now more similar to the densely populated European countries included in the benchmark set, the Commission set the US dummy to zero. As discussed in Attachment D, the US dummy has a significant effect on the normalisation and therefore on the results of the econometric adjustment approach.

149. More recent analysis of the relationship between average copper loop length and forward-looking UCLL costs (including submissions on the revised draft decision and dialogue between experts at the September 2012 conference) has found that the relationship is much more complicated and more uncertain than earlier believed.[91] The Commission's assessment is that rather than there being a predictable link between average copper loop length and forward-looking UCLL costs, the relationship is uncertain.

150. This conclusion implies that, under the econometric adjustment approach, it is not appropriate to determine the UCLL price assuming that New Zealand is more similar

89 Commerce Commission, *UCLL and UBA Averaging and Section 30R Reviews Conference: Final transcript*, 27 October 2011, page 14, lines 19-25 and page 57, lines 20-29.

90 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, page 35, paragraphs 156 and 160.

91 See paragraphs 296 to 307 below for further details.

in cost characteristics to European countries than US states. As a result, the econometric normalisation should not be based solely on setting the US dummy to zero.[92] The results of this revision to the econometric adjustment are set out in Attachment D.

The indexing approach

151. The indexing approach involves benchmarking percentage changes in forward-looking cost-based prices over the period from 2007 to 2012. This approach was first proposed in the 2011 draft UCLL averaging decision.[93] In the 2011 draft UCLL averaging decision the Commission tried to update the UCLL prices by benchmarking against prices for similar services in comparable countries that using a forward-looking cost-based pricing method, by using a "peer group" benchmarking approach. However, the Commission encountered a comparability problem; the vast majority of countries were excluded from the benchmark because they had significantly higher population densities than New Zealand.

152. Due to the lack of data points available under the peer group benchmarking approach, the Commission's view was that the indexing approach should be used to update UCLL monthly rental and connection charges.

153. The indexing approach produced a wider set of benchmarked observations. The Commission had regard to price changes in countries that met the forward-looking cost-based benchmarking criteria both at the time of the UCLL STD and the present day, even though some of those countries did not meet the comparability criteria used in the UCLL STD. The Commission considered that "…trends in cost-based prices are unlikely to be sensitive to the comparability criteria".[94] This approach received some support in submissions.[95]

154. In the September 2011 draft decision, the median of the indexing approach resulted in a 2.18% reduction in UCLL monthly rental prices and the mean resulted in a 5.12% reduction. The indexing data set from the September 2011 draft decision is shown in Table 3 below.

---

92 The US dummy is discussed in more detail in paragraphs 175-181 and 413-421 below.

93 Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011.

94 Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011, page 23, paragraph 80.

95 See paragraph 256 below.

Table 3: Indexing data set from September 2011 draft decision[96]

Country	Currency	Monthly rental used in UCLL STD (local currency)	Current monthly rental (local currency)	% change
Sweden	SEK	81.00	88.33	9.05%
Denmark	DKK	64.17	68.33	6.48%
Finland	EURO	11.23	11.48	2.23%
Greece	EURO	8.70	8.51	-2.18%
Germany	EURO	10.50	10.08	-4.00%
Canada	CAD	21.79	18.60	-14.64%
Czech	CZK	360.00	242.00	-32.78%

Mean	-5.12%
Median	-2.18%

155. The Commission noted that the indexing methodology would ensure that any updated prices in New Zealand reflect changes in prices since the date of the 2007 UCLL STD.[97]

96 Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011, page 23, table 4.

97 Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011, page 18, paragraph 52.

Approach to currency conversion

General approach to currency conversion

156. In the revised draft determination the Commission used a 50/50 blend of purchasing power parity (PPP) and 10 year average market exchange rates to convert benchmarked UCLL monthly rental prices from local currency into New Zealand dollars.[98]

157. In their submission, CEG submitted that the Commission's approach to currency conversion could be improved by using sector-specific PPP rates, instead of PPPs for GDP.[99] They also argued that if sector-specific PPPs are not adopted, a number of modifications should be made to the Commission's existing approach to currency conversion to improve its accuracy.[100]

158. The Commission has considered the currency conversion issues raised by CEG, but has decided to retain the existing approach of a 50/50 blend of market exchange rates and PPPs for GDP.[101] This approach to currency conversion is consistent with the approach used in the original UCLL STD (and all subsequent STDs).

159. The Commission believes that its established approach to currency conversion remains appropriate for this UCLL benchmarking review. There is no compelling reason to depart from the established approach in this case because:[102]

    159.1 there is considerable complexity associated with the calculation of sector-specific PPPs that may undermine their accuracy; and

    159.2 it is not clear that PPPs for sector-specific PPPs for "construction" and "machinery and equipment" (referred to by CEG) are representative of UCLL inputs.

160. The approach to currency conversion, including responses to the issues raised by CEG, is described in more detail in Attachment C.

Correction to 2007 PPP rates

161. In their submission, Network Strategies noted that the dataset for the 2007 UCLL STD used a European average PPP rate for European countries, but the 2012 benchmarking data uses country-specific PPP rates.[103] They recommended that country-specific PPP rates be used for the 2007 dataset.

---

98 The Commission used a blended exchange rate made up of the ten year average market exchange rate to 31 December 2011 (sourced from oanda.com), and 2010 World Bank PPP rates for GDP.

99 CEG, *Benchmarking UCLL prices for New Zealand*, June 2012, pages 5-13.

100 CEG, *Benchmarking UCLL prices for New Zealand*, June 2012, page 14-15, paragraphs 39-47.

101 The PPPs for GDP have been updated from 2010 to 2011 values, based on the World Bank data set.

102 See paragraphs 384 to 389 below for further discussion.

103 Network Strategies, *Benchmarking for the unbundled copper local loop service: Comments on the revised draft determination*, 31 May 2012, page 16.

162. This issue was raised at the UCLL conference and participants agreed that the 2007 PPP rates should be corrected.[104]

163. The Commission agrees that country-specific PPP rates should be used for the 2007 data set. As discussed in paragraphs 185 to 187 below, this correction to the 2007 PPP rates affects the results of the econometric adjustment approach.[105]

Conclusion on approach to applying the IPP for the 2012 benchmarking review

164. In the context of this review, the Commission considers that the econometric adjustment and indexing approaches to updating UCLL monthly rental prices are more reliable than raw benchmarking. The econometric adjustment and indexing approaches address the expected downwards bias associated with removing the population density comparability criterion and excluding US states.

165. In the following two sections the Commission applies the econometric adjustment and indexing approaches to updating monthly rental prices. The outcomes of these two approaches are then used to determine updated UCLL monthly rental prices for New Zealand.

[104] Commerce Commission, *UCLL benchmarking review conference*, 19-20 September 2012, pages 109 to 113.

[105] The correction to the 2007 PPP rates also applies to indexing in New Zealand dollars, described in paragraphs 230 to 233 below.

Econometric adjustment approach

Purpose

166. This section applies the econometric adjustment approach to updating UCLL monthly rental prices. The outcome of the econometric adjustment approach, including an assessment of this approach, is presented.

The econometric adjustment approach to updating UCLL monthly rental prices

167. Under the econometric adjustment approach, the regression model from the 2007 UCLL STD is used to normalise the benchmarked prices.

168. The regression model can predict how UCLL monthly rental prices would change in response to a change in population density, teledensity or urbanisation. The impact of US states is captured by the US dummy variable.[106]

169. Each of the countries in the benchmark set has a different population density, teledensity and urbanisation rate to New Zealand. Normalising the benchmarks removes the predicted effect of differences in population density, teledensity and urbanisation on the benchmarked prices.

170. The econometric approach corrects for bias in the benchmarking data set that is likely to result from removing the population density comparability criterion and excluding US states. The econometric adjustment approach is explained in detail in Attachment D.

Applying the IPP under the econometric adjustment approach

171. The Commission considers that the econometric adjustment approach falls within its discretion under the IPP.

172. The econometric adjustment approach addresses the expected downwards bias associated with removing the population density comparability criterion and the exclusion of US states. It is evident after the application of the normalisation process that the Commission has striven to apply the IPP by benchmarking against prices for similar services in comparable countries that use a forward-looking cost-based pricing method.

173. Each component part of the IPP has been applied under the econometric adjustment approach. For example, the adjustments made to the benchmarked prices by the econometric adjustment approach enable a more accurate application of the comparability criteria of the IPP by removing the predicted effect of differences in population density, teledensity and urbanisation on the benchmarked prices.

Changes to the econometric adjustment approach since the revised draft determination

174. There are three main differences from the normalisation carried out in the revised draft determination:

---

[106] A dummy variable takes the value of either zero or one. The US dummy was included in the econometric model to capture differences between the US and non-US jurisdictions.

174.1 the impact of the US Dummy has been introduced (which is consistent with the approach in the 2007 UCLL STD);

174.2 regression outliers have been excluded from the econometric estimation; and

174.3 the 2007 PPP rates have been corrected.

Impact of the US dummy

175. The revised draft determination excluded the impact of the US dummy variable when undertaking the econometric adjustment approach. As discussed in paragraph 148 above, this reflected earlier submissions that the reduction in the average copper loop length for the network to which the UCLL STD applies meant that the network is now more similar in cost characteristics to European networks. This was in contrast to the assumption in 2007 that the New Zealand network was intermediate between the US and European networks.

176. The approach to the US dummy variable was questioned in submissions on the revised draft determination.

177. The 2007 regression analysis identified that forward-looking cost-based UCLL prices for US states were significantly higher than elsewhere in the world.[107] This showed through in the US dummy variable in the regression analysis.

178. The US dummy was excluded when normalising prices in the revised draft determination. Therefore, the normalised prices did not account for the impact of US states being excluded from the data set. This lowered the price and made it inconsistent with the 2007 UCLL STD.[108]

179. The price we are estimating in this review is an update of the benchmarked price in the 2007 UCLL STD. With the link between average copper loop length and forward-looking UCLL costs being uncertain, and absent evidence of an error in 2007,[109] the Commission considers that its approach should be consistent with the 2007 decision.[110] Therefore we have concluded that the US dummy should be included.

---

107 Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, paragraph 160, bullet point three.

108 Several submissions rejected the idea of introducing the US dummy, for example see Network Strategies, *UCLL re-benchmarking cross submission: A review of new issues*, 15 June 2012, page 33.

109 Network Strategies and Covec suggested that higher US prices may be due to longer loop lengths, see Network Strategies, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2015, pages 20 and 21 and Covec, *UCLL Benchmarking Review: Cross-Submission*, 15 June 2012, footnote 3. We note that the submission from CEG contains information which suggests that the evidence on US loop lengths is not representative of the dataset, see CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, paragraphs 55 to 71.

110 Some submissions suggested that the 2007 decision was wrong and we did not need to be consistent with the 2007 UCLL STD. In particular, it was suggested that it was wrong to include the US dummy (in part) in determining the price for New Zealand. We note at the time the Commission was transparent that there was no evidence suggesting whether New Zealand costs were closer to the US or other countries and that a mid-point would be used. No further evidence on this has been presented other than

180. The Commission considered two options for applying the US dummy variable within the normalisation of the dataset.

180.1 Firstly, CEG suggested applying half of the impact of the dummy variable to the normalisation.[111] This is equivalent to multiplying the US dummy variable by 0.5.[112]

180.2 Secondly, we considered estimating the 'normalised' price for each benchmark country including and excluding the US dummy variable, then taking the mid-point of these estimates.

181. The Commission has adopted the mid-point estimate, because this is more consistent with the 2007 decision. Given that it is unknown whether New Zealand is more akin to the US or other countries, a mid-point should be taken.

Impact of regression outliers

182. Several submissions queried the robustness of the 2007 econometrics.[113] In response, we have carried out several tests on the econometric regression, including testing for regression outliers.

183. These tests indicated that the 2007 dataset contains some outliers.[114] We found no issues with the statistical significance of the regression model.

184. In this context, the Commission considers that outliers should be excluded from the econometric regression. The main reasons for this are as follows.

184.1 Regression outliers disproportionally affect the regression parameters.[115] Given that the regression results are used to normalise the 2012 benchmark data set, this will feed through to all prices that are used for benchmarking under the econometric adjustment approach.

---

the US loop lengths (which is discussed in footnote 109) and in these circumstances we see no rationale for moving from the 2007 decision on this point.

111 CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, paragraph 73.

112 We have considered the objections placed against this during consultation, in particular that a dummy variable cannot take the value of 0.5 and that doing so implies the regression is mis-specified. See Network Strategies, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2015, pages 17 to 22 and Covec, *UCLL Benchmarking Review: Cross-submission*, 15 June 2012, paragraphs 32 to 39. Where we are required to arrive at a price and we do not know which of two different prices are more representative of New Zealand, taking a mid-point between the two is consistent with benchmarking. Furthermore, we believe this is consistent with the 2007 decision.

113 Network Strategies, *Benchmarking for the unbundled copper local loop service: Comments on the revised draft determination*, 31 May 2012; Covec, *Unbundled Copper Local Loop Service Benchmarking Review: Response to Revised Draft Determination*, 31 May 2012; and NERA, *Review of the Commerce Commission's UCLL Benchmarking: Report for Telecom New Zealand*, 15 June 2012.

114 We identified eight outliers in the revised 2007 data set (with the correction to 2007 PPP rates). These outliers are: Canada, Vermont, Ireland, Nevada, Czech Republic, Finland, Germany and Sweden. We have defined an outlier as a data point which is indicated as an outlier by two or more of our four outlier tests. See paragraphs 444.3 and 446 below for further details.

115 Regression outliers have a greater impact on the regression estimation than other data points and therefore have a disproportional impact.

184.2 The exclusion of outliers slightly reduces the size of the 2007 regression dataset. Once the outliers are excluded the regression should be the best linear unbiased estimator.

Correction to 2007 PPP rates

185. As described in paragraphs 161 to 163 above, the Commission has corrected the 2007 benchmarking data set by introducing country-specific PPP rates for European countries. The regression results have been updated to reflect this correction.

186. The updated regression results, both including and excluding outliers, are shown in Table 4 below.

Table 4: Updated regression results with correction to 2007 PPP rates

Co-efficient	Revised 2007 data set	
	With outliers	Excluding outliers
Population Density	-0.072	-0.079
Teledensity	-0.322	-0.340
Urbanisation	-0.360	-0.419
Constant	2.920	2.867
US Dummy	0.297	0.366

187. The coefficients in the far right hand column, which are based on the corrected 2007 PPP data with outliers excluded, have been used when calculating the results of the econometric adjustment approach in this determination.

Results of the econometric adjustment approach

188. Under the econometric adjustment approach, the Commission has applied the urbanisation and teledensity comparability criteria. The following criteria are used to identify countries that are comparable to New Zealand:

188.1 urbanisation greater than or equal to 60%

188.2 teledensity between 20% and 60%.

189. 10 of the 13 countries that apply a forward-looking cost-based pricing methodology meet these comparability criteria. Macedonia, Romania and Slovenia all fail to meet the urbanisation criterion.[116]

190. Some of the countries identified as regression outliers are included within the list of 10 countries meeting the urbanisation and teledensity comparability criteria. These countries are the Czech Republic, Germany and Sweden.

116 See Table 2 above for further information on these comparability criteria.

191. As regression outliers, these data points are not well explained by the econometrics. This raises the question of whether the benchmarked prices for the Czech Republic, Germany and Sweden should be adjusted to be comparable to New Zealand using the results of the econometric model.

192. Therefore, we have considered two variants of the econometric adjustment approach:

192.1 the econometric adjustment including outliers in the 2012 benchmark set; and

192.2 the econometric adjustment excluding outliers from the benchmark set.

193. Neither variant of the econometric adjustment approach is clearly superior to the other. The fact that a country is identified as an outlier in 2007 does not mean that the 2012 data point is incorrect or that the econometric equation does not apply to that country.[117] However, given that we use the econometric equation to 'normalise' each country's 2012 price to be representative of New Zealand, there is greater potential for the normalisation to result in error when it is applied to countries that have been identified as outliers.

194. This concern needs to be traded off against the potential for exclusion of outliers to eliminate valuable information from the benchmark set. The 2012 benchmark set is already limited to 10 countries, and excluding outliers reduces the sample size to seven.[118]

195. Nonetheless, the Commission considers that the econometric adjustment approach is a valid method. The econometric adjustment approach:

195.1 directly addresses the comparability issues associated with removing the population density comparability criterion and excluding US states; and

195.2 makes best use of the available evidence from both 2007 and 2012.

196. The Commission has considered the outcome of the econometric adjustment approach both including and excluding outliers from the 2012 benchmark set. The results under the two variants of the econometric adjustment approach are presented in Table 5 below.

117 There is a substantive difference between an outlier's impact on an estimated regression and applying the results of regression to an outlier. Regression outliers have a disproportional impact on the estimated equation and error here would feed through to all the normalised data points.

118 We know that the 2007 regression data set still performs well when outliers are excluded. However, we do not have this guidance with the 2012 data set.

Table 5: Benchmarking data under the econometric adjustment approach

Country	Normalised price ($NZ) Including outliers	Normalised price ($NZ) Excluding outliers
Turkey	18.30	18.30
Greece	19.52	19.52
Sweden	21.84	-
Czech Republic	22.13	-
Italy	22.52	22.52
Denmark	22.65	22.65
Belgium	24.26	24.26
Cyprus	25.71	25.71
Switzerland	26.88	26.88
Germany	29.74	-
Mean	23.35	22.83
Median	22.58	22.65

Price point selection

197. Submissions on the revised draft determination generally supported using the median in preference to the mean when selecting a price point.[119] However, at the September 2012 conference, Covec acknowledged that "…when you draw any particular sample and look at it, you're right, that it may be distributed in a way that makes you uncomfortable…".[120]

198. In the case of the econometric adjustment approach, the Commission considers that the mean is likely to provide a more accurate measure of central tendency than the median for the following reasons.

198.1 The median is generally preferred where there are influential observations in a small data set, which may have a disproportionate impact. However, the benchmark set under the econometric adjustment approach does not appear to be overly influenced by such observations.

198.2 Germany is potentially an influential observation. However, this is relevant to the question of whether Germany should be excluded as an outlier, rather than whether the median should be used instead of the mean.

119 See, for example, Covec, *Unbundled copper local loop service benchmarking review: Response to revised draft determination*, 31 May 2012, page ii, paragraph 5; and Network Strategies, *Benchmarking review for the unbundled copper local loop service: Comments on the revised draft determination*, 31 May 2012, page 19.

120 Commerce Commission, *UCLL benchmarking review conference transcript*, 19-20 September 2012, page 156, lines 7-9.

198.3 In the econometrically adjusted benchmark set the median gives less weight to the higher price points because the distribution is slightly skewed towards the high end. In this respect, the mean is a point of balance of all the data whereas the median is the midpoint of the range. We believe the point of balance is more appropriate in this context.

199. Given that neither of the two variants of the econometric adjustment approach is clearly superior to the other, the Commission considers that it is appropriate and necessary to give both equal weight.

199.1 Under the econometric approach with outliers included in the benchmark set the mean is $23.35. This represents a 4.52% reduction from the current geographically averaged UCLL monthly rental price of $24.46.[121]

199.2 Under the econometric approach with outliers excluded from the benchmark set the mean is $22.83. This represents 6.65% reduction from the current geographically averaged UCLL monthly rental price of $24.46.

200. The mid-point of the two variants is a geographically averaged UCLL price of $23.09, which represents a decrease of 5.58% from the current price of $24.46.

Belgium is no longer excluded as an outlier

201. In the revised draft determination, Belgium was excluded from the normalisation process as an outlier. The Commission noted that Belgium had the highest population density and urbanisation rate of all the countries in the benchmark set.[122]

202. In response, Network Strategies submitted "…the Belgian price is not necessarily an outlier but is behaving entirely as expected". They argued that "given that the Commission has set guidelines for inclusion in the sample, with the explicit objective of removing outliers, it is not appropriate to reduce the sample further by narrowing the comparability criteria effectively on a case-by-case basis".[123] Covec also disagreed with excluding Belgium from the benchmark set.[124]

203. The Commission agrees with these submissions. Belgium has been included in the benchmarking data set in Table 5 above.

Assessment of the econometric adjustment approach

204. The econometric adjustment approach normalises the benchmark set using the results of the 2007 regression. This has the effect of correcting for bias associated with removing the population density criterion and excluding US states.

---

121 As noted in paragraphs 81 to 82 above, $24.46 was the geographically averaged UCLL monthly rental price set in the 2011 UCLL averaging review.

122 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, page 39, paragraph 180.

123 Network Strategies, *Benchmarking review for the unbundled copper local loop service: Comments on the revised draft determination*, 31 May 2012, page 18.

124 Covec, *Unbundled copper local loop service benchmarking review: Response to revised draft determination*, 31 May 2012, page 3, paragraph 21.

205. The econometric adjustment approach is consistent with the 2007 UCLL STD, because it relies on the econometric model developed in that decision. This approach sits within the Commission's discretion under the IPP.

206. The main disadvantage of the econometric approach is it assumes that the 2007 cost relationships still apply. The regression model was estimated using 2007 data on forward-looking cost-based UCLL monthly rental prices.

207. The relationship between forward-looking costs and country characteristics such as population density, urbanisation and teledensity may change over time. Applying the 2007 model as part of this benchmarking review relies on the estimated relationships between UCLL prices and population density, teledensity and urbanisation remaining unchanged.

208. Despite this, the 2007 regression model provides the best available evidence for correcting the benchmarking dataset for removing population density and excluding US states. It is also reasonable to assume that changes in the relationship of population density to costs will normally not be large over a period of five years, compared to the effect of other factors on costs.[125] Therefore, the Commission considers that the econometric adjustment approach is valid for updating UCLL prices in the context of this review.

Outcome of the econometric adjustment approach to updating UCLL monthly rental prices

209. As described in paragraph 200 above, the outcome of the econometric adjustment approach is a geographically averaged UCLL monthly rental price of $23.09. This represents a 5.58% reduction from the current price of $24.46.

[125] No party has provided the Commission with evidence of any major shift in technology over this five year period that would significantly affect the relationship between the cost-drivers in the 2007 econometric model and forward-looking UCLL costs.

Indexing approach

Purpose

210. This section applies the indexing approach to updating UCLL monthly rental prices. The outcome of the indexing approach, including an assessment of this approach, is presented.

The indexing approach to updating UCLL monthly rental prices

211. Under the indexing approach, forward-looking cost-based UCLL prices at the time of the UCLL STD are compared to current forward-looking cost-based UCLL prices. The percentage change in prices over this time period is calculated, and applied to the price that was set in the original UCLL STD.

Applying the IPP under the indexing approach

212. In determining the price for the UCLL service, the Commission has sought to apply the natural and ordinary interpretation of the IPP as a whole and in light of section 18.[126] We consider that the indexing approach satisfies the requirements of the UCLL IPP as a whole.

213. Nonetheless, given the disagreement amongst the submitters as to whether indexing is an appropriate approach; the Commission considers that an analysis of the component parts of the IPP is required, as outlined below. In particular, Vodafone argued that it is not legal or reasonable for the Commission to benchmark percentage changes in prices, instead of applying the IPP and conducting a benchmarking exercise.[127] In contrast, Chorus argued that indexing avoids the problems associated with undertaking a fresh benchmarking exercise.[128]

214. The first key component of the IPP for the UCLL service is benchmarking against prices. The Commission considers that benchmarking is used in this context as a means of applying an objective measure of the efficient price for provision of a regulated service.

215. We consider that benchmarking price trends or indexing, and applying these to the existing benchmarked price, is an appropriate benchmarking approach. Indexing fully applies the requirement in the IPP to benchmark against price as every element of

---

126 This is consistent with the purposive approach to statutory interpretation mandated by section 5 of the Interpretation Act 1999, which requires the meaning of legislation to be "ascertained from its text and in the light of its purpose". As emphasised by the Supreme Court in *Commerce Commission v Fonterra Co-operative Group Ltd* [2007] 3 NZLR 767 at [22] (NZSC): "Even if the meaning of the text may appear plain in isolation of purpose, that meaning should always be cross-checked against purpose in order to observe the dual requirements of s 5. In determining purpose the Court must obviously have regard to both the immediate and the general legislative context. Of relevance too may be the social, commercial or other objective of the enactment."

127 Vodafone, *Review of the Initial Pricing Principle and Updating of the Unconditioned Local Loop Service* (UCLL), 3 October 2011, page 11.

128 Chorus, *Submission on Commission draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL STD and consequential changes to the UBA uplift*, page 3, paragraph 8.

the UCLL service is benchmarked by both the existing price and the prices that are chosen for the indexing exercise.[129]

216. In addition, the IPP requires the Commission to identify similar services against which to benchmark. The Commission considers that the similar services component is intended to support the reliability of any benchmarking undertaken so that the IPP more closely matches an efficient price for provision of the regulated service.

217. The Commission considers that indexing is consistent with the similar services component of the IPP because the benchmarked countries included in the indexing exercise use services that are similar to the UCLL service in New Zealand.

218. The IPP also requires the Commission to identify comparable countries. The Commission considers that the comparability component is an important means of ensuring the reliability of any benchmarking exercise that is undertaken.

219. As with the raw benchmarking and econometric adjustment approaches, all of the countries included in the indexing benchmark set meet the urbanisation and teledensity comparability criteria. Further, the percentage change resulting from the indexing approach is applied to the price determined in accordance with the 2007 UCLL STD, which applied the full set of comparability criteria.

220. The countries chosen in the indexing exercise all use a forward-looking cost-based approach. Therefore, the forward-looking cost-based component of the IPP has also been properly applied.

221. The Commission considers that indexing fully applies the IPP according to a natural and ordinary meaning of the IPP and is an effective proxy for a price under the final pricing principle.

Results of the indexing approach

222. Three possible methods for applying the indexing approach have been considered.

222.1 **Nominal indexing data set:** which applies the indexing approach using nominal percentage changes in prices, measured in the local currency for each country. This is the method that was used when reporting the results of the indexing approach in both the draft UCLL averaging decision and the revised draft decision.

222.2 **Indexing data set in New Zealand dollars:** which applies the indexing approach by measuring percentage changes in prices in New Zealand dollars. This method was proposed in Sapere's submission on the revised draft decision as a way of addressing differing levels of inflation between countries in the indexing data set.

[129] There was evidence before the Commission that the indexing methodology would, with comparable data and assumptions, generate the same result as other approaches. See Commerce Commission, *Final transcript: UCLL and UBA Averaging and Section 30R Reviews Conference*, 27 October 2011, page 66.

222.3 **Inflation adjusted indexing data set:** which applies the indexing approach by adjusting prices for inflation, as measured by the producer price index (PPI) for industrial activities, in each of the benchmarked countries over the period from 2007 to 2011. This method has been considered in response to the concerns regarding inflation raised by Sapere.

223. The indexing data set under each of these methods is presented below. Only those countries that met the forward-looking cost-based pricing methodology in the 2007 UCLL STD, and continue to apply a forward-looking cost-based pricing methodology today, are included under the indexing approach. Five countries meet this requirement.[130]

Nominal indexing data set

224. The updated indexing data set for UCLL monthly rental prices is included in Table 6 below. This table shows percentage movements in forward-looking cost-based prices using the local currency for each country, in nominal terms.

Table 6: Indexing data set for UCLL monthly rental prices (local currency)

Country	Currency	Monthly rental used in UCLL STD (local currency)	Current monthly rental (local currency)	Nominal % change
Sweden	SEK	81.00	88.33	9.05%
Denmark	DKK	64.17	68.33	6.48%
Germany	EURO	10.50	10.08	-4.00%
Greece	EURO	8.70	7.78	-10.57%
Czech Republic	CZK	360.00	242.00	-32.78%

Mean	-6.36%
Median	-4.00%

225. Differing levels of inflation between countries was raised by CEG as a potential issue under the indexing approach. In their submission on the draft UCLL averaging decision, CEG stated:[131]

> …we have explored general changes in price levels between countries. Prices have increased somewhat more in New Zealand than in the benchmarking countries between 2007 and 2010, with the exception of Greece and the Czech Republic. This suggests that even if real efficient costs have changed by the same percentage in New Zealand and other countries, the use of nominal price changes from international jurisdictions will tend to understate the nominal cost change in New Zealand.

130 These five countries are Czech Republic, Denmark, Germany, Greece and Sweden.

131 CEG, *Benchmarking UCLL costs: A report for Telecom New Zealand*, October 2011, page 11, paragraph 37.

226. However, CEG did not propose any adjustments to the indexing data set to correct for differing levels of inflation.

227. In their submission on the revised draft determination, Sapere measured price changes over time in New Zealand dollars, rather than in the local currency of each country. Sapere submitted:[132]

> We have measured price changes over time in NZ$ rather than the local currency, as this is the best method we are aware of to avoid confounding differing levels of inflation in the various countries with the trends in cost drivers in NZ$ that are relevant to this benchmarking exercise.

228. The Commission considers that the concern raised by CEG and Sapere regarding inflation is legitimate. Under the nominal indexing approach, differing levels of inflation will influence the outcome. For example, a high inflation country is likely to see a greater increase (or smaller decrease) in UCLL price compared to an otherwise identical low inflation country.

229. Therefore, the Commission has rejected the nominal indexing approach for the purposes of this review.

Indexing data set in New Zealand dollars

230. The indexing data set measuring price changes in New Zealand dollars is presented in Table 7 below.[133] This is the method proposed by Sapere to address the concerns they raised regarding inflation.

Table 7: Indexing data set for UCLL monthly rental prices ($NZ)

Country	2007 monthly rental ($NZ)[134]	Current monthly rental ($NZ)[135]	% change
Denmark	13.63	15.16	11.24%
Sweden	15.09	16.44	8.97%
Germany	19.52	19.28	-1.21%
Greece	17.70	15.78	-10.84%
Czech Republic	27.44	20.29	-26.05%

Mean	-3.58%
Median	-1.21%
Change from 2007 to 2012 mean	-6.87%

132 Sapere Research Group, *Comments on benchmarking UCLL prices*, 1 June 2012, page 16, paragraph 68.
133 The 2007 monthly rental prices are based on corrected PPP rates, to reflect country-specific PPP rates. See paragraphs 161 to 163 above for further discussion.
134 The mean of the 2007 monthly rental prices is $18.68.
135 The mean of the current monthly rental prices is $17.39.

231. Under this approach, the mean is a price reduction of 3.58% and the median is a price reduction of 1.21%. The difference between the mean of the 2007 prices and the mean of the 2012 prices is a reduction of 6.87%.

232. Taking the difference between the mean of the 2007 prices and the mean of the 2012 ensures greater consistency between benchmarking data sets over time. For example, if the same list of benchmark countries applied in both 2007 and 2012, taking the mean percentage difference and applying this to the 2007 price (calculated by the mean) would give the same result as a new benchmarking exercise in 2012.[136]

233. Therefore, the Commission considers that the change between the 2007 mean and the 2012 mean is appropriate when applying the indexing in New Zealand dollars method. This results in a price decrease of 6.87%.

Inflation adjusted indexing data set

234. A possible alternative approach of addressing the inflation issue is to update the indexing data set to account for inflation observed in the benchmark countries from 2007 to the end of 2011.

235. The Producer Price Index (PPI) for industrial activities has been used to adjust the data set for inflation.[137] The indexing data set under this method is presented in Table 8 below.

Table 8: Indexing data set for UCLL monthly rental prices (PPI – industrial activities)

Country	Currency	Monthly rental used in UCLL STD (nominal 2007 prices)	Inflation from 2007 to 2011	Monthly rental used in UCLL STD (inflation adjusted)	Current monthly rental (2012 prices)	Inflation adjusted % change	Updated NZ price based on single benchmark[138]	% change from current UCLL price
Sweden	SEK	81.00	6.94%	86.62	88.33	1.97%	30.37	24.17%
Denmark	DKK	64.17	19.18%	76.48	68.33	-10.65%	26.61	8.80%
Germany	EURO	10.50	7.80%	11.32	10.08	-10.95%	26.52	8.44%
Greece	EURO	8.70	18.24%	10.29	7.78	-24.37%	22.53	-7.90%
Czech Republic	CZK	360.00	2.65%	369.55	242.00	-34.51%	19.51	-20.26%

Mean	2.65%
Median	8.44%

136 Commerce Commission, *Final transcript: UCLL and UBA Averaging and Section 30R Reviews Conference*, 27 October 2011, page 66.

137 Data on the PPI for industrial activities has been sourced from the OECD.

138 The figures in the “updated price based on single benchmark” column are calculated by (1) increasing the current UCLL monthly rental price of $24.46 by the rate of inflation in NZ from 2007 to 2011 (21.77%), to give an inflation adjusted price for NZ of $29.79, then (2) applying the “inflation adjusted % change” to the inflation adjusted price for NZ.

236. Under the inflation adjusted indexing approach, the mean is a price increase of 2.65% and the median is a price increase of 8.44%.

237. Based on the benchmarking data in Table 8 above, the Commission considers that the mean provides a measure of central tendency that more accurately reflects the underlying data. Due to the small size of the data set, there is the potential for large swings in the median due to changes in the data set.

238. The mean of the inflation adjusted indexing approach results in a price increase of 2.65%.

Changes to indexing data since the 2011 draft decision

239. The Commission first considered the indexing approach to updating UCLL monthly rental prices in the 2011 draft decision. In the 2011 draft, the nominal indexing approach was used.[139] The mean was a 5.12% reduction in the monthly rental price and the median was a 2.18% reduction.[140]

240. The main changes to the indexing approach since the 2011 draft decision are described below.

    240.1 The indexing in New Zealand dollars and inflation adjusted indexing variants have been used in preference to nominal indexing.

    240.2 Finland and Canada have been excluded from the data set.[141]

    240.3 The current monthly rental price for Greece has been updated from 8.51 EURO to 7.78 EURO.[142]

Other issues associated with the indexing approach

Timing of UCLL STD data points

241. Network Strategies submitted that for comparability, it is important that consistent dates are used for all observations in the benchmarking data set.[143]

242. Network Strategies noted that in the 2007 UCLL STD data set, prices for most European countries were sourced from the European Commission's (EC's) 12th implementation report. The prices in the EC's 12th implementation report were as at 1 October 2006.

---

139 The results of the indexing approach used in the 2011 draft decision are replicated in Table 3 above.

140 Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011, page 23.

141 See pages 76 and 77 of the revised draft determination for further details on the reasons for excluding Finland and Canada. Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, pages 76-77.

142 The monthly rental price for Greece of 7.78 EURO took effect on 1 January 2012. See page 3 of http://www.otewholesale.gr/Portals/0/LLU%20COLLOCATION_Pricelist%20eng300312.pdf

143 Network Strategies, *Review of Commission's 2011 UCLL benchmarking*, 30 September 2011, page 3.

243. However, prices for some European countries in the 2007 UCLL STD data set were sourced from a different time period. For example, the prices for Germany and Sweden were sourced directly from the regulator in those countries, and differed from the prices reported in the EC's 12th implementation report.

244. Similarly, CEG proposed changes to the UCLL STD data set prices for Greece and Denmark, to ensure that 2007 prices are used for those countries.[144]

245. The Commission disagrees with these proposed retrospective adjustments to the prices from the 2007 UCLL STD dataset. The price that was set in the 2007 UCLL STD relied on the benchmarking data that was available at that time.

246. The intention of the indexing approach is to update the price that was determined in the 2007 UCLL STD. Therefore, it is appropriate to measure percentage changes in the prices that were relied on in the 2007 UCLL STD, rather than retrospectively adjusting prices to ensure that they are all from a consistent time period.

247. Under the indexing approach, the benchmarked percentage change is applied to the price that was set in the UCLL STD (which was determined based on the benchmarking data that was available at that time). If retrospective adjustments were made to the UCLL STD benchmarking data, the benchmarked price determined in the UCLL STD would need to be amended before applying the benchmarked percentage change.

Should Switzerland be included in the benchmarking data set

248. Sapere submitted that Switzerland should be included in the indexing data set.[145] CEG also previously submitted that Switzerland should be included.[146]

249. However, forward-looking cost-based prices for Switzerland were not included in the benchmarking data set for the 2007 UCLL STD. Further, the 2008 annual report by the Swiss regulator states that it set the price for full unbundling of the local loop for the first time in September 2008 (although a 2007 price was set retrospectively at that time).[147]

250. Given that the service was not regulated in 2007 (when the original STD was released), Switzerland has not been included in the indexing data set.

---

144 CEG, *Benchmarking UCLL costs: A report for Telecom New Zealand*, October 2011, page 22, paragraph 67.
145 Sapere Research Group, *Comments on benchmarking UCLL prices*, 1 June 2012, page 13, paragraph 58.
146 CEG, *Benchmarking UCLL costs: A report for Telecom New Zealand*, October 2011, pages 20-21, paragraphs 57-60.
147 http://www.comcom.admin.ch/org/00452/00562/index.html?lang=en&download=NHzLpZeg7t,lnp6I0NTU042l2Z6ln1ad1IZn4Z2qZpnO2Yuq2Z6gpJCDdIR4gGym162epYbg2c_JjKbNoKSn6A-- pages 17-18.

Should Czech Republic be excluded from the benchmarking data set

251. CEG previously submitted that "on the basis of the very large reduction in monthly charges between 2007 and 2011 relative to the other benchmark sample countries, we consider that the Czech Republic is most appropriately considered an outlier".[148]

252. In response Network Strategies noted that the Czech regulator took into account decreasing cost trends caused by the introduction of a new order processing system. The European Commission noted that this system brought economies in processing wholesale orders from other operators, which explains the substantial decline in UCLL costs.[149]

253. On the basis of this evidence, the Commission considers that it is appropriate to include the Czech Republic in the indexing data set.

Assessment of the indexing approach

254. The indexing approach maintains consistency with the prices set under the UCLL STD, by avoiding significant price fluctuations resulting from a change in benchmark set rather than a change in forward-looking costs.

255. Further, indexing provides a simple way of addressing the comparability problem. The Commission previously stated that trends in forward-looking cost-based prices are unlikely to be sensitive to comparability criteria.[150] As with the raw benchmarking and econometric adjustment approaches, all of the countries included in the indexing benchmark set meet the urbanisation and teledensity comparability criteria.

256. The Commission's approach to comparability under the indexing method received some support in submissions. CEG stated:[151]

> Across jurisdictions, estimates of forward-looking costs will differ in absolute terms due to factors such as the capital intensity of the network (as a result of different levels of urbanisation, tele-density and fixed line penetration) and local input costs. However, access networks in all jurisdictions will be subject to similar cost pressures over time due to such factors as technological change, price trends for major inputs such as copper main cables and global capital market requirements.

257. However, the indexing approach limits the benchmarking data set to those countries which have consistently applied a forward-looking LRIC pricing methodology at the time of the UCLL STD (in 2007) and at the time of this UCLL benchmarking review. We have been able to identify five countries that meet this requirement.

---

148 CEG, *Benchmarking UCLL costs: A report for Telecom New Zealand*, October 2011, page 17, paragraph 47. CEG conducted statistical outlier testing by way of Pierce's criterion.

149 Network Strategies, *UCLL cross submission: Final report for TelstraClear*, 14 October 2011, page 13,

150 Commerce Commission, *Draft reviews of the application of the initial pricing principle of, and updated benchmarking for, the UCLL standard terms determinations and consequential changes to the UBA up-lift*, 9 September 2011, page 23, paragraph 80.

151 CEG, *Benchmarking UCLL costs: A report for Telecom New Zealand*, October 2011, pages 5-6, paragraph 19.

258. A number of concerns have been raised regarding the indexing approach.

 258.1 There is considerable variation in the benchmarked UCLL monthly rental price changes for countries that have consistently applied a forward-looking LRIC approach.[152] In nominal terms, two countries had price increases and three countries had price decreases. The range is from a price decrease of 32.78% in the Czech Republic to a price increase of 9.05% in Sweden.

 258.2 In the absence of detailed information on what is driving changes in prices for the benchmarked countries, and whether those factors are applicable to New Zealand, taking the mean or median of the indexing data set risks resulting in an arbitrary benchmark.[153]

259. In addition, Vodafone has argued that, from a conceptual point of view, "…it cannot have been the intention of policy makers that the underlying costs of regulated services were so stable, decade after decade, that one application of the IPP would only need a bit of price indexing from the first IPP onwards".[154] They submitted:[155]

> We continue to have real difficulties seeing how price indexing is permissible under the Act; a fresh benchmarking exercise is required – and that does not mean relying on the old benchmarking and indexing. If Chorus' views were accepted, it leads to the implausible scenario that the benchmark countries that were originally chosen in the first application of IPP are the only countries that may be considered as the decades go by. This places enormous, and we would argue unreasonable weight, on getting the original selection right. That is hard to reconcile with the language of the Act but also impractical.

260. The Commission disagrees that the text or purpose of the Act requires an entirely fresh benchmarking exercise. It considers that the indexing approach meets the requirements of the IPP, as explained above. In any case, Vodafone's implausible scenario is far from the case here. The Commission's determination is only five years old. This review was instigated by the Commission - no party sought to have the determination reviewed or updated. More fundamentally, no party has provided the Commission with evidence of cost changes that are not captured by an indexing approach.

261. On balance, the Commission considers that the advantages of the indexing approach outweigh its disadvantages.

262. Benchmarking percentage changes ensures that the prices in the UCLL STD are updated to reflect changes in cost, rather than a change in benchmarking methodology. Therefore, this approach has the significant benefit of maintaining consistency with the prices that currently apply under the UCLL STD.

---

152 Network Strategies, *Review of Commission's 2011 UCLL benchmarking*, 30 September 2011, page 16.

153 Network Strategies, *UCLL and UBA Averaging and Section 30R Reviews Conference: Final transcript*, 27 October 2011, page 140, lines 17-25.

154 Vodafone, *Submission on revised draft determination on the benchmarking review for the unbundled copper local loop service (UCLL)*, 15 June 2012, page 4.

155 Vodafone, *Submission on revised draft determination on the benchmarking review for the unbundled copper local loop service (UCLL)*, 15 June 2012, page 11, paragraph 34.

Outcome of the indexing approach to updating UCLL monthly rental prices

263. The Commission considers that indexing in New Zealand dollars and inflation adjusted indexing are equally valid methods of applying the indexing approach. These methods both correct for differing levels of inflation between the countries in the benchmark set.

264. Given that the Commission considers these methods are both valid, we have given them equal weight when determining the outcome of the indexing approach. As described in paragraphs 233 and 238 above, indexing in New Zealand dollars results in a price decrease of 6.87% and inflation adjusted indexing results in a price increase of 2.65%.

265. The mid-point of indexing in New Zealand dollars and inflation adjusted indexing is a price decrease of 2.11%. Therefore, the Commission's view is that the indexing approach leads to a 2.11% reduction in the UCLL monthly rental price.

Conclusion on updated UCLL monthly rental prices

Purpose

267. This section reaches a final view on updated UCLL monthly rental prices under the UCLL benchmarking review. Relativity between the UCLL and UBA services is also considered.

Updated geographically averaged UCLL monthly rental price

268. The IPP requires the Commission benchmark prices for the UCLL service. Benchmarking has become more difficult since 2007 because of a reduction in the number of comparable countries that have up-to-date forward-looking cost-based prices for similar services.

269. In the context of this review, the Commission considers that the econometric adjustment and indexing approaches to updating UCLL monthly rental prices are more reliable than raw benchmarking.

    269.1 The econometric adjustment approach leads to a decrease in the geographically averaged UCLL monthly rental price of 5.58%

    269.2 The indexing approach leads to a decrease in the geographically averaged UCLL monthly rental price of 2.11%.

270. The Commission has given both the econometric adjustment and indexing approaches equal weight. Both of these approaches address the expected downwards bias associated with removing the population density comparability criterion and excluding US states.

    270.1 The econometric adjustment approach directly corrects for the downwards bias by normalising the 2012 benchmark set using the results of the regression contained in the 2007 UCLL STD.

    270.2 The indexing approach avoids the comparability problem by benchmarking percentage changes in forward-looking cost-based UCLL monthly rental prices.

271. We have no compelling reasons or evidence before us to believe that either the econometric adjustment approach or the indexing approach is clearly superior to the other for the purpose of updating UCLL monthly rental prices in this review. Neither approach to the IPP gives rise to a better outcome in terms of the matters specified in section 18.

272. Therefore, the Commission has taken the mid-point of the econometric adjustment and indexing approaches. This leads to a 3.85% price reduction. The resulting geographically averaged UCLL monthly rental price is $23.52.[156] This updated

[156] This implies a real price decrease of 21% from the current geographically averaged price of $24.46, which is based on 2007 benchmarking data. The calculation of this real percentage decrease assumes inflation for New Zealand of 21.77% for the period from 2007 to 2011, based on the PPI for industrial activities.

geographically averaged price will come into effect on 1 December 2014, which is three years after Telecom's separation day.

273. The Commission considers that a 3.85% price reduction best gives, or is likely to best give, effect to the purpose set out in section 18 of the Act. We systematically applied the IPP in order to reach our best estimate of the forward-looking cost-based UCLL price for New Zealand. Setting a forward-looking cost-based price is consistent with promoting competition and efficiencies in accordance with section 18.

274. Even a modest change in price, such as the 3.85% decrease in this case, can have significant impacts on competition in telecommunications markets. Such a change is not so small that it could be said that no change is necessary in order to best give effect to section 18 of the Act. Accordingly, the Commission considers that it is necessary to amend the UCLL price under section 30R of the Act.

275. Due to the modest nature of the price decrease, the Commission considers that a glide path is not required in this case.

Updated urban and non-urban UCLL monthly rental prices

276. Applying the de-averaging approach described in the revised draft determination gives an urban price of $19.08 and a non-urban price of $35.20.[157] The proportion of urban and non-urban lines used by the Commission when calculating these de-averaged prices is 72.45% and 27.55% respectively, which is based on all lines in Chorus' network.[158] These are the proportions that were used in the final UCLL averaging decision.[159]

277. The updated urban and non-urban UCLL monthly rental prices come into effect immediately.

Relativity between UCLL and UBA

278. The Commission is required to consider the relativity between the UCLL service and the UBA service (to the extent that terms and conditions have been determined for that service).[160] UCLL and UBA are alternative regulated services which enable access seekers to deliver telecommunications services to end-users.

279. The relative prices of the UCLL and UBA services can affect incentives to invest in unbundling. The Commission seeks relative prices that will provide incentives to invest efficiently.

---

157 The de-averaging methodology is described in the revised draft determination. See Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, paragraphs 269 to 283.

158 The proportion of urban and non-urban lines referred to in the revised draft determination (70.6% and 29.4% respectively) has not been used in this final determination. These proportions were based on non-cabinetised lines only.

159 Commerce Commission, Decision No. 739: *Final decision in relation to the review of the UCLL, UBA and Sub-loop Services standard terms determinations (STDs) for the purpose of implementing clause 4A of the Telecommunications Amendment Act 2011*, 24 November 2011, page 2.

160 See Schedule 1 of the Act.

280. In the revised draft determination, the Commission noted that despite reductions in the retail-minus UBA price[161], there was a significant increase in the number of unbundled lines and exchanges over the period from December 2007 to December 2011.[162] This indicates that access seekers still face incentives to purchase UCLL, so the relatively requirement is met.

281. The Commission considers that the modest decrease in UCLL monthly rental prices resulting from this review will not undermine efficient investment in UCLL or UBA.

282. We will further consider the relativity between UBA and UCLL prices as part of the separate review to set the cost-based UBA price, which will come into effect three years after separation day.

---

161 Over the period from December 2007 to December 2011, the Basic UBA with POTS price decreased from $27.44 to $21.46, a reduction of 21.8%. The urban and non-urban UCLL monthly rental prices remained static over this period.

162 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, page 53, paragraphs 262 – 263.

Loop length and the link between UCLL and UCLFS prices

Purpose

284. This section considers the link between UCLL and UCLFS prices, which formed a substantial part of this review between the first conference in October 2011 and the second conference in September 2012. This section explains the role of average copper loop length, and the reasons for the Commission's view that it is appropriate for a single price to apply to UCLL and UCLFS.

The role of average copper loop length

285. Since the UCLL standard terms determination was released in November 2007, Chorus deployed a fibre-to-the-node network through a process referred to as cabinetisation. The aim of cabinetisation was to shorten the length of copper in its network in order to improve broadband speeds.

286. Cabinetisation reduced the average copper loop length for the UCLL service from 2,066 metres to 1,470 metres.[163] This is a reduction of approximately 29%.

287. At the UCLL averaging conference in October 2011, it was asserted by a range of parties that loop length is a key cost-driver for the UCLL service. CEG, acting for Telecom/Chorus[164], stated:[165]

> …line density, local loop {length}, are really important drivers. They sort of define the network architecture in each of the countries and that's really what we're trying to capture in choosing countries that are comparable to New Zealand.

288. Similarly, Network Strategies stated that loop length is a cost-driver for the UCLL service:[166]

> Both density and the length of the line will affect the cost. The loop length would be ideal as a criterion, in my view, for the benchmarking but I do know that from a pragmatic point of view, it's very difficult to get the data to support using that as a criterion but it is, in my view, an ideal criterion.

289. Submissions on the discussion paper released on 17 February 2012 also generally supported the view that the impact of cabinetisation on loop length is an important consideration when updating UCLL prices.[167]

290. In response to the statements at the October 2011 conference, and submissions on the February 2012 discussion paper, the Commission requested advice from WIK-Consult on the likely impact of reduced loop length on the forward-looking cost-based price for the UCLL service. WIK concluded that "the roll-out of FTTN should

---

163 Chorus, *Supplementary submission in response to discussion document on the re-benchmarking of prices for Chorus' unbundled copper local loop service*, 23 March 2012, page 2, paragraph 2.

164 The conference held in October 2011 was prior to the structural separation of Telecom.

165 Commerce Commission, *UCLL and UBA Averaging and Section 30R Reviews Conference: Final transcript*, 27 October 2011, page 81, lines 8-13.

166 Commerce Commission, *UCLL and UBA Averaging and Section 30R Reviews Conference: Final transcript*, 27 October 2011, page 88, lines 13-19.

167 See, for example, the discussion in paragraphs 208 to 211 of the revised draft determination.

lead to a lower cost-based UCLL price" and that, as an upper boundary, the "benchmarked UCLL price would be reduced by 29% to take account of the cabinetisation".[168]

291. The revised draft decision proposed a geographically averaged UCLL monthly rental price of $19.75. This represented a 19% decrease from the current price of $24.46. The Commission noted that the 29% reduction in average copper loop length was "…likely to be reflected in the updated UCLL price".[169]

The Commission proposed separate prices for UCLL and UCLFS due to the reduction in average copper loop length

292. The revised draft determination highlighted the link between the prices for the UCLL and UCLF services. The UCLFS price, where the access seeker is purchasing the UCLF service alone, is currently the geographically averaged UCLL monthly rental price contained in the UCLL STD.

293. As noted above, the revised draft determination explained that, due to cabinetisation, the average copper loop length for the UCLL STD Service is approximately 29% shorter than it was in 2007, and that this was likely to be reflected in the updated UCLL price.

294. However, the UCLF service is available on both cabinetised and non-cabinetised lines in Chorus' copper local loop network, whereas the UCLL STD Service is available on non-cabinetised lines only.[170] Therefore, the average loop length of UCLF lines are not subject to the substantial reduction in average loop length that applies to the UCLL STD Service.

295. As a result, the Commission noted there was a risk that Chorus would under-recover the forward-looking costs for the UCLF service if the UCLF price was based on the geographically averaged price for the UCLL STD Service. The Commission expressed a preliminary view that there were reasonable grounds to commence an investigation under Schedule 3 of the Act to consider amending the UCLFS pricing principles to address this issue.[171]

The relationship between loop length and forward-looking costs is now unclear

296. The relationship between loop length and the forward-looking cost-based UCLL price was challenged by a number of parties in their submissions on the revised draft determination. For example, Analysys Mason submitted:[172]

168 WIK-Consult, *UCLL cost drivers and comparability criteria*, 27 April 2012, page 17.

169 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, page 65, paragraph 321.

170 The UCLF service is available on cabinetised lines only where the existing copper feeder has been connected to the new active distribution cabinet.

171 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, pages 65-66.

172 Analysys Mason, *Comments on UCLL service benchmarking review*, 29 May 2012, page 5.

It is not easy to draw accurate conclusions about the impact of the roll-out of FTTN on the cost-based UCLL price. A shorter average loop length post-cabinetisation does not simply mean that the cost-based UCLL price must be lower: it could very easily be higher. This is because average loop length captures only a part of the information about the copper network which is relevant to cost.

297. Sapere Research Group submitted:[173]

WIK's analysis leads in fact to a conclusion that the cost implications of FTTN are ambiguous, as their analysis identifies cost changes operating in both directions. This point is important, as the Commission accepts the WIK conclusions and uses them to corroborate the results of its benchmarking.

… a reduction in average UCLL loop lengths in the post-FTTN population does not mean that UCLL line costs have decreased, and that these costs on a per line basis may have indeed increased.

298. At the conference on 19 and 20 September 2012, the majority of participants emphasised that the relationship between loop length and forward-looking UCLL costs is uncertain.

299. For example, Vodafone stated:[174]

While loop length has undoubtedly shortened on non-cabinetised UCLL lines, other factors may have countered this but it is unclear by how much. In our view, further tinkering with models on these questions is the preserve of a request for a final pricing principle by some interested party.

300. Network Strategies stated:[175]

…there are a lot of factors that influence the cost of the local loop. Line length is one of them but what's important is the combination of all these factors, and that's what's critically important. Yes, we still believe that line length does have an influence on cost but there are also many many others. We can't say definitively that line length is the most important, although there's certainly been some discussion on that, but there are a lot of other factors and it's the interaction between all of them that is important, and we can't just isolate line length, loop length, and, as Aaron said just before, and treat it in isolation without also investigating some of those other factors as well.

301. Chorus stated "our view is that the Commission made an understandable error in assuming that a drop in the loop length signalled a decrease in the UCLL costs".[176]

302. Covec, on the other hand, maintained the view that there is a clear relationship between average loop length and forward-looking UCLL costs.[177] They referred to a

---

173 Sapere Research Group, *Comments on benchmarking UCLL prices*, 1 June 2012, page 4, paragraph 19; page 5, paragraph 27.

174 Commerce Commission, *UCLL benchmarking review conference transcript*, 19-20 September 2012, page 28.

175 Commerce Commission, *UCLL benchmarking review conference transcript*, 19-20 September 2012, page 86.

176 Commerce Commission, *UCLL benchmarking review conference transcript*, 19-20 September 2012, page 8.

regression model that was included one of their previous submissions, which estimated the impact of loop length on cost-based UCLL prices.[178]

303. However, as noted in the revised draft determination, Covec's regression model should be treated with significant caution because it is based on only eight observations. In addition, the data set used was not up-to-date due to Covec being unable to locate recent data on average copper loop lengths.[179]

304. Further, Sapere submitted that Covec's econometric model does not provide an appropriate basis for setting UCLL prices for the following reasons.[180]

304.1 The model is mis-calibrated, in that it forecasts a 2007 UCLL price for New Zealand of $18.27 or $17.35 (depending on the average loop length used), compared to the price determined by the Commission of $24.29.

304.2 The model is based on a much smaller and very different dataset to that used by the Commission to validate the 2007 benchmarked price, and these data are silent on movements in UCLL prices since 2007.

304.3 The loop length data used to estimate the model is of unknown origin and vintage, and it is unclear whether they relate to comparable UCLL services.

304.4 Evidence provided by Analysys Mason and Sapere demonstrates that changes in the forward-looking costs of providing the UCLL service since 2007 will not have scaled in a linear manner with respect to loop length, as assumed by the Covec model.

305. The Commission considers that Covec's econometric model does not provide a relationship between average loop length and forward-looking UCLL costs that could be used an appropriate basis for setting UCLL prices.

306. In summary, the Commission thoroughly investigated the initial claims made by most parties that a reduction in average copper loop length is:

306.1 firstly, a key cost driver; and

306.2 secondly, should logically result in a lower forward-looking cost-based UCLL price.

307. However, the general conclusion amongst participants (including independent economic experts) at the September 2012 conference is now that loop length, in isolation, is not the key cost-driver for the UCLL service, and that the relationship between loop length and forward-looking costs is ambiguous at best.

---

177 Commerce Commission, *UCLL benchmarking review conference transcript*, 19-20 September 2012, page 86.

178 Commerce Commission, *UCLL benchmarking review conference transcript*, 19-20 September 2012, page 66.

179 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, pages 46-47, paragraphs 223-228.

180 Sapere Research Group, *Review of Covec econometric model*, 15 June 2012, pages 1-2.

The benchmarked countries set "all of network" prices

308. Analysys Mason and Telecom argued that the prices for countries that we have benchmarked against reflect the entire access network, not just the sub-set of lines served directly from the MDF. These submissions implied that the Commission has benchmarked "all of network" (or full UCLL) prices, rather than prices for non-cabinetised lines only.

309. Specifically, Analysys Mason submitted:[181]

> Within the EU, LLU continues to be made available, and the fact that FTTC exists has not caused regulators to exclude the cabinetised loops from the calculations of the cost of the copper loops.
>
> …
>
> Our principal conclusion is that a benchmark based on these countries prices for local loop unbundling is a benchmark of the cost of all loops, and not a benchmark of the cost of a subset of those loops post-fibre-deployment.

310. Similarly, Telecom submitted that the benchmarked cost models "…do not differentiate between lines with and without an overlay cabinet, but instead include multiple access network technologies (including cabinetisation) to determine efficient 'all loop' UCLL prices".[182]

311. The Commission agrees that the benchmarked prices reflect the full access network in each of the countries. Therefore, the same benchmark set would result whether the Commission was benchmarking a price for the full UCLL network, or non-cabinetised lines only.

312. Consequently, even if there was a clear relationship between average loop length and forward-looking cost-based prices, it would be extremely difficult in a benchmarking context to reliably benchmark a price for non-cabinetised lines only.

The Commission has determined that a single price for UCLL and UCLFS is appropriate

313. We acknowledge that Telecom argued that a single price for the UCLL and UCLF services is mandatory under the Act.[183] We do not need to address the practical issues raised by Telecom at the conference as the Commission has decided to set a single price for non-cabinetised UCLL (NCUCLL) and full UCLL (FUCLL) (the price for UCLFS is derived from FUCLL).[184]

314. The decision to set a single price for FUCLL and NCUCLL is consistent with the geographical averaging of the UCLL price under the Act and preserves the existing simple link to the UCLFS price.

---

[181] Analysys Mason, *Comments on UCLL service benchmarking review*, 29 May 2012, pages 2-4.

[182] Telecom, *Revised draft determination on the UCLL benchmarking review: Submission*, 1 June 2012, page 5, paragraph 11.

[183] Commerce Commission, *UCLL benchmarking review conference*, 19-20 September 2012, pages 33 - 45.

[184] NCUCLL and FUCLL are defined in more detail in 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.

315. The Commission has spent many months trying with limited success to obtain data, appropriate for application in the context of the IPP, that would indicate an appropriate method, if any, for deriving separate prices for NCUCLL and FUCLL.

316. Under the IPP, the Commission is unable to derive two different benchmark sets, one for NCUCLL and one for FUCLL, within the UCLL benchmarking data that is currently available. There is nothing equivalent to NCULL in the benchmark set, and no party has provided the Commission with any other data that could be used. The international benchmarking data available under the IPP only allows us to set a single price for the UCLL Service.

317. We have considered whether to apply an adjustment factor to the international benchmarking data in order to derive separate prices for FUCLL and NCULL. In our view, the evidence did not support creating separate prices for these services. In particular, we could not obtain a robust answer out of Chorus' network data, or other parties' submissions to derive prices for NCUCLL and FUCLL in a manner which is consistent with the IPP. Furthermore, expert opinion and available data was divided as to what, if any, the pricing difference would be between NCUCLL and FUCLL.

318. In determining that it is not possible to benchmark the NCUCLL price, the Commission believes that it has gone as far as is appropriate under the IPP when considered against the context of section 18. The Commission's more limited role under the IPP meant that it was unable to model costs for the purpose of setting NCUCLL and FUCLL prices. In particular, the Commission does not consider that it was empowered to ask Chorus to model costs across its cabinetised and non-cabinetised network under the IPP.

319. Whether or not it is possible to set a NCUCLL and FUCLL price is more suited to an inquiry under the TSLRIC final pricing principle. At this stage, it is possible that two prices for NCUCLL and FUCLL could be a legitimate FPP outcome but which is higher or lower (or whether they are the same) is not clear, and cannot be determined without undertaking a full modelling exercise.

320. As a consequence of all of these uncertainties and practical obstacles, the Commission has decided that a single price for the UCLL Service under the UCLL STD and the UCLF Service under the UCLFS STD is the appropriate outcome at this time. The updated geographically averaged UCLL price of $23.52 automatically flows through to the UCLFS STD.

321. Accepting that a single price is required for FUCLL and NCUCLL in this review does not mean that the Commission agrees with Telecom's arguments that a single price is mandatory. The Act and the Amendment Act cannot be read as making a single price mandatory for UCLL (covering both FUCLL and NCUCLL) in the way that Telecom suggests. For the avoidance of doubt, however we consider a single price is permissible.

UCLL connection charges

Purpose

322. This section summarises UCLL connection charges for countries that meet the benchmarking criteria. This benchmarking data is used to calculate transfer, bulk transfer and new connection prices for New Zealand. The Commission considers that it is necessary, in terms of section 30R of the Act, to alter the changes as set out in this section.

Approach to updating connection charges

The Commission has followed the approach used in the 2007 UCLL STD

323. The Commission has followed the approach in the 2007 UCLL STD to determine updated UCLL connection charges.

324. In the 2007 UCLL STD the Commission concluded that all countries meeting the similar services and forward-looking cost-based benchmarking criteria were comparable to New Zealand when setting connection charges. This was on the basis that "…the cost of the transfer service is primarily driven by labour rates, and that differences in labour rates are accounted for through the use of PPP rates".[185]

325. Consistent with the UCLL STD, benchmarked connection charges have been converted to New Zealand dollars using PPP rates only. Therefore, unlike monthly rental prices, there are no comparability issues associated with benchmarking connection charges.

Chorus contractor rates have not been used to set connection charges

326. In their submission on the revised draft determination, Chorus argued that connection charges should be set by passing through the rates charged by their service companies:[186]

> In our view, a better way to set these connection charges would be for the Commission to require that Chorus sets connection charges at a rate that consists of the contractor fees plus an appropriate margin (as determined by the Commission). The connection charge in the STD would be set out as a formula.

327. The Commission disagrees with Chorus' submission. In accordance with the IPP, and consistent with other STDs issued by the Commission, we have updated the core connection charges by international benchmarking.

Transfer of an existing MPF connection

Single transfer

328. The MPF transfer charge is incurred where the metallic path facility (MPF) serving an existing retail customer is transferred from one UCLL-based access seeker to

185 Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, pages 66, paragraphs 268.

186 Chorus, *Submission in response to the revised draft determination on the benchmarking review for the unbundled copper local loop service*, 1 June 2012, page 74, paragraph 324.

another. This involves disconnecting the existing jumper wire that connects the MPF to the existing access seeker's equipment, and reconnecting it to the new access seeker's equipment.

329. The charge for this service therefore relates to the cost of sending a person to the exchange to physically move the jumper. In addition, there may be some back-office functions associated with the transfer, for example, the updating of Chorus' records for the purposes of billing the new access seeker.

330. The MPF Transfer charge in the UCLL STD is $74.83 per transfer. This was based on the median of cost-based transfer charges in 12 European and 44 US jurisdictions.[187]

331. Updated information on transfer charges has been identified for the 13 countries that meet the forward-looking cost-based benchmarking criteria. Connection charges have been converted to New Zealand dollars using PPP rates. This is because connection charges primarily involve labour costs.[188]

332. For the purposes of setting a benchmarked transfer charge, the Commission considers that all countries that use a forward-looking cost-based pricing methodology are comparable to New Zealand. This is because the cost of providing this service is primarily driven by labour costs, as opposed to demographic factors such as urbanisation and population density. Differences in labour costs are accounted for through the use of PPP rates.[189]

333. The benchmark set for UCLL transfer connection charges is included in Table 9 below.

---

187 Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, pages 66-68, paragraphs 266-274.

188 This approach is consistent with the UCLL STD. See Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, pages 67-68, paragraph 272.

189 This is consistent with the approach in the UCLL STD. See Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, page 66, paragraph 268.

Table 9: UCLL transfer connection charge benchmark set

Country	Currency	Transfer charge (local currency)	2011 PPPs for GDP[190]	Connection charge ($NZ)
Switzerland	CHF	44.40	0.98	45.20
Greece	EURO	21.80	0.46	46.93
Turkey	TRY	35.44	0.68	51.84
Belgium	EURO	36.35	0.57	63.94
Denmark	DKK	338.00	5.13	65.89
Germany	EURO	34.59	0.52	66.02
Italy	EURO	34.90	0.52	66.59
Slovenia	EURO	27.59	0.41	66.72
Macedonia	MKD	824.00	12.26	67.22
Sweden	SEK	440.00	5.85	75.19
Czech Republic	CZK	794.00	9.14	86.89
Cyprus	EURO	45.07	0.45	99.84
Romania	RON	126.11	1.11	113.68

Mean	70.46
Median	66.59
25th percentile	63.94
75th percentile	75.19

334. In their submission, Vodafone identified updated connection charges for a number of countries.[191] The Commission has checked the prices referred to by Vodafone and updated those connection charges that we have been able to verify. The main changes from the revised draft determination are:

334.1 Turkey and Macedonia have been added to the benchmark set for the reasons described in paragraphs 97 to 100 above.

334.2 The transfer charge for Greece has been updated from 26.50 EURO to 21.80 EURO.[192]

334.3 The transfer charge for Slovenia has been updated from 51.01 EURO to 27.59 EURO.[193]

335. The Commission has determined that an MPF transfer charge of $70.46 is appropriate, which is based on the mean of the benchmark set in Table 9 above. This represents a 5.8% decrease from the current price of $74.83.

---

190 Consistent with the approach to monthly rental prices, PPPs for GDP have been sourced from the World Bank.

191 Vodafone, *Submission on the revised draft determination on the benchmarking review for the unbundled copper local loop service (UCLL)*, 1 June 2012, page 14, paragraph 37.

192 The new "one-off connection fee – active local loop" of 21.80 EURO took effect on 1 January 2012. See page 3 of http://www.otewholesale.gr/Portals/0/LLU%20COLLOCATION_Pricelist%20eng300312.pdf

193 See page 87 of http://www.telekom.si/_files/1153/RUO_cistopis01092011.pdf

Bulk transfer

336. The bulk transfer connection charge applies where multiple transfers are requested as part of the same order. This charge applies where there are 20 or more connections at the same exchange and no customer site visit is required.

337. The per-connection charge for bulk transfers is lower than the charge for a single connection. This reflects the lower unit cost of transferring multiple connections.

338. The bulk transfer charge in the UCLL STD is $56.12 per transfer. This is based on the single transfer price of $74.83 less a 25% discount (benchmarked against a bulk transfer discount set by the ACCC).[194]

339. Of the countries in Table 9 above, the Commission has been able to identify an updated bulk transfer charge for Belgium only. In Belgium, the single transfer charge is €36.35 and the bulk transfer charge is €27.19 per connection.[195] This equates to a bulk transfer discount of 25%.

340. The bulk transfer discount observed in Belgium is consistent with the benchmarked discount used in the UCLL STD. Therefore, the Commission has determined that a bulk transfer discount of 25% remains appropriate. Applying a 25% discount to the updated MPF transfer charge of $70.46 leads to a bulk transfer charge of $52.84 per connection (a 5.8% reduction from the current price).

MPF new connection

341. The MPF new connection charge relates to the establishment of a new service instance of the MPF service. The service is established from spares or intact circuits with an existing service lead into the building. That is, it uses an existing MPF that is not currently used for the provision of telecommunications services.

342. The MPF new connection charge applies where a site visit to the customer premises is required in order to establish and test the connection. Therefore, this charge is higher than the MPF transfer charge.

343. The MPF new connection charge in the UCLL STD is $225 per connection. This is based on the new connection charge in the UK and France being approximately three times the connection charge for transferring an existing service.[196]

344. Updated information on new connection charges has been identified for Belgium, Denmark, Germany, Greece, Italy and Sweden. This information in summarised in Table 10 below.

194 Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, pages 68-71, paragraphs 275-293.

195 The "physical migration" and "mass migration" charges for Belgium are available on page 21 of the following document: http://www.bipt.be/GetDocument.aspx?forObjectID=2490&lang=fr.

196 Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, page 72, paragraphs 294-295.

Table 10: Summary of data on new connection charges

Country	Currency	Transfer charge (local currency)	New Connection charge (local currency)	Ratio of new connection to transfer charge
Italy	EURO	34.90	57.40	164%
Germany	EURO	34.59	60.72	176%
Belgium	EURO	36.35	73.79	203%
Denmark	DKK	338.00	759.00	225%
Greece	EURO	21.80	59.66	274%
Sweden	SEK	440.00	1230.00	280%

Mean	220%
Median	214%
25th percentile	182%
75th percentile	261%

345. A summary of the relevant connection charges for each country is included below.

345.1 **Belgium:** the "physical migration" charge is €36.35 and the charge for "activation with customer visit" is €73.79.[197] The ratio is 203%.

345.2 **Denmark:** the connection charge without a technician visit is DKK 338 and the connection charge with a technician visit is DKK 759.[198] The ratio is 225%.

345.3 **Germany:** the price for a transfer with work at the exchange is €34.59 and the price for a connection with work at the exchange and the customer's premises is €60.72. The ratio is 176%.

345.4 **Greece:** the one-off connection fee for an active local loop is €21.80 and the one-off connection fee for an inactive local loop is €59.66.[199] The ratio is 274%.

345.5 **Italy:** the connection charge is €34.90 for an active line and €57.40 for an inactive line. The ratio is 164%.

345.6 **Sweden:** the connection charge is Kr440 for a "simple installation" (when only work at the MDF is needed) and Kr1230 for a "medium installation" (when

[197] See page 21 of the following document: http://www.bipt.be/GetDocument.aspx?forObjectID=2490&lang=fr.

[198] See Table 14 on page 12 of the following document: http://www.itst.dk/tele-og-internetregulering/smp-regulering/engrospriser/filarkiv-engrospriser/lraic/lraic-priser/2011/Endelig%20LRAIC-afgorelse%20for%202011.pdf

[199] See page 3 of the following document: http://www.otewholesale.gr/Portals/0/LLU%20COLLOCATION_Pricelist%20eng300312.pdf

work is required at both the exchange and the customer's premises).[200] The ratio is 280%.

346. The Commission has determined that the MPF New Connection charge should be calculated as 220% of the MPF transfer charge. This is based on the mean of the benchmarked ratios observed in Belgium, Denmark, Germany, Greece, Italy and Sweden.

347. Applying the ratio of 220% to the updated MPF transfer charge of $70.46 leads to an MPF new connection charge of $155.10 per connection. This represents a 31.1% decrease from the current MPF new connection charge of $225.

[200] See page 2 of the following document: http://www.pts.se/upload/Ovrigt/Tele/Bransch/Kalkylarbete%20fasta%20nätet/revidering%202011/10-420-kostnadsresultat-slutlig-hybridmodell-v%208_1.pdf.

Sub-loop UCLL and UBA without POTS prices

Purpose

348. This section sets out updated sub-loop UCLL and UBA without POTS monthly rental prices resulting from the UCLL benchmarking review.

Scope of the UCLL benchmarking review

349. The UCLL benchmarking review was commenced on 25 August 2011. The Commission noted that the purpose of the review was to:[201]

349.1 update the benchmark data set used in the UCLL STD to determine the monthly UCLL prices and UCLL connection charges

349.2 update prices under the UCLL, UBA and Sub-loop Services STDs that are affected by the UCLL benchmark data update – for the UBA STD this involves updating the uplift that applies to the price for the UBA service variants without POTS.

350. The updated UCLL monthly rental and connection charges are described earlier in this determination. Sub-loop and UBA prices are discussed below.

Sub-loop UCLL monthly rental prices

351. The urban, non-urban and geographically averaged sub-loop UCLL monthly rental prices contained in the sub-loop STD are $11.98, $22.12 and $14.77 respectively.[202] These prices are set as 60.4% of the corresponding full UCLL monthly rental prices.

352. 60.4% is the benchmarked proportion of sub-loop to full loop prices in jurisdictions where forward-looking cost-based access prices are available. The Commission concluded in the sub-loop services STD that benchmarking sub-loop UCLL prices as a proportion of full loop prices would best meet the requirements of section 18 of the Act.[203]

353. In the revised draft determination the Commission concluded that it would be inappropriate to calculate updated sub-loop UCLL monthly rental prices by applying the 60.4% ratio to the updated UCLL prices. This was because:[204]

---

201 Commerce Commission, *UCLL benchmarking review – notice of additional review and separate decision for Sub-loop Services STD*, 25 August 2011.

202 Commerce Commission, *Standard terms determination for Chorus' sub-loop unbundled copper local loop network services: Service appendix 1, Schedule 2 sub-loop UCLL price list*, 18 June 2009 (updated to incorporate Commerce Commission decisions, amendments and clarifications through 30 November 2011), page 11.

203 Commerce Commission, Decision No. 672: *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 collocation service (Sub-loop Co-location) and Telecom's unbundled copper local loop network backhaul service (Sub-loop Backhaul)*, 18 June 2009, page 35, paragraphs 144-145.

204 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012 pages 63-64, paragraphs 313-314.

> The sub-loop UCLL service has not been subject to the reduction in loop length that has occurred to the full UCLL service. Therefore, the Commission considers that applying the 60.4% proportion to the proposed UCLL monthly rental prices may lead to below-cost prices for the sub-loop UCLL service.
>
> Accordingly, the Commission's preliminary view is that the sub-loop UCLL prices should be updated in a subsequent review.

354. In response, some parties supported the Commission's proposal to update sub-loop UCLL prices in a subsequent review.[205] For example, Covec submitted that "...the appropriate ratio of the sub-loop monthly rental to the full UCLL monthly rental is likely to have changed as a result of the cabinetisation process, and SLU prices need to be updated".[206]

355. Chorus, on the other hand, submitted that there is no need to review sub-loop UCLL prices because "…SLU prices were set relative to a UCLL cost, and that cost has not fundamentally changed".[207]

356. However, as discussed earlier, we are now benchmarking a full network price for UCLL, rather than a price based on non-cabinetised lines only. Updated urban, non-urban and geographically averaged UCLL prices have been determined on this basis.

357. The Commission considers that it is appropriate to flow through changes in the UCLL monthly rental price to the sub-loop UCLL monthly rental price. The updated sub-loop UCLL monthly rental prices, calculated using the 60.4% proportion of sub-loop to full loop prices, are:

    357.1 $11.52 in urban areas

    357.2 $21.26 in non-urban areas

    357.3 $14.21 geographically averaged.

Naked UBA uplift

358. In the final UCLL averaging decision, the Commission determined that the UBA without POTS (naked UBA) uplift is to be set by reference to the geographically averaged UCLL price contained in the UCLL STD.[208]

---

205 See, for example, Kordia and CallPlus, *Submission on revised draft determination on the benchmarking review for the unbundled copper local loop service*, 1 June 2012, page 7, paragraph 42; InternetNZ, *Submission in response to the Commerce Commission's: "Revised draft determination on the benchmarking review of unbundled copper local loop service"*, 1 June 2012, paragraph 4.22.

206 Covec, *Unbundled copper local loop service benchmarking review: Response to revised draft determination*, 31 May 2012, page iv, paragraph 10.

207 Chorus, *Submission in response to the revised draft determination on the benchmarking review for the unbundled copper local loop service*, 1 June 2012, page 76, paragraph 332.

208 Commerce Commission, Decision No. 739: *Final decision in relation to the review of the UCLL, UBA and Sub-loop Services standard terms determinations (STDs) for the purpose of implementing clause 4A of the Telecommunications Amendment Act 2011*, 24 November 2011.

359. Changes to the geographically averaged UCLL price now automatically flow through to the naked UBA service. Therefore, no further amendments are required to the UBA STD to reflect the updated UCLL price.

Dr Stephen Gale
Telecommunications Commissioner
Commerce Commission

Attachment A: Application of forward-looking cost-based benchmarking criteria

The following table summarises the application of the forward-looking cost-based benchmarking criteria.

Country	Pricing approach	Cost standard	Current cost or historic cost?	Bottom-up or top-down?[209]	Recent UCLL rates available?	Unbundling is operational and loops have been unbundled?	Overall assessment based on screening criteria?	Met the FLCB criteria in the UCLL STD?
Australia	Cost based	FAC (Building blocks approach)	Hybrid	Hybrid	✓	✓	×	✓
Austria	Retail-minus	n/a	n/a	n/a	✓	✓	×	✓
Belgium	Cost based	LRAIC	Current cost	Bottom-up	✓	✓	✓	×
Bulgaria	?	?	?	?	✓	×	×	×
Canada	Cost based	Incremental cost	?	?	✓	✓	×	✓
Cyprus	Cost based	LRIC	Current cost	Bottom-up	✓	✓	✓	×
Czech Republic	Cost based	LRAIC	Hybrid	Top-down	✓	✓	✓	✓
Denmark	Cost based	LRAIC	Current cost	Hybrid	✓	✓	✓	✓
Finland	Cost based	?	?	?	✓	✓	×	✓
France	Cost based	Top-down regulatory accounts	?	Top-down	✓	✓	×	✓
Germany	Cost based	LRAIC	Current cost	Bottom-up	✓	✓	✓	✓
Greece	Cost based	LRAIC	Current cost	?	✓	✓	✓	✓
Hungary	?	?	?	?	?	✓	×	×
Ireland	Cost based	BU-LRAIC	Current cost	Bottom-up	✓	✓	✓	✓
Italy	Cost based	BU-LRIC	Current cost	Bottom-up	✓	✓	✓	×
Latvia	Cost based	FAC	Current cost	Top-down	?	?	×	×
Lithuania	Cost based	FAC	Historic cost	Top-down	✓	?	×	×
Luxembourg	?	?	?	?	?	✓	×	×
Macedonia	Cost based	LRIC	Current cost	?	✓	✓	✓	×
Malta	Cost based	Incumbent's regulatory	Historic cost	Top-down	✓	?	×	×

[209] Bottom-up cost models are constructed from 'the network up'. A network capable of servicing the demand for services is designed and dimensioned. Top-down cost models are based on the firm's current actual costs and capital equipment as detailed in its financial accounts and asset register.

		accounts						
Netherlands	Cost based	Embedded Direct Cost (EDC)	Current cost	?	✓	✓	×	✓
Norway	Cost based	FAC	Historic cost	Top-down	✓	✓	×	✓
Poland	Cost based	LRAIC	Current cost	Top-down	?	✓	×	×
Portugal	Cost based	FAC	Historic cost	Top-down	✓	✓	×	×
Romania	Cost based	LRAIC	Current cost	Bottom-up	✓	✓	✓	×
Slovenia	Cost based	LRIC+	Current cost	Bottom-up	✓	✓	✓	×
Spain	Cost based	FAC	Hybrid	Hybrid	✓	✓	×	✓
Sweden	Cost based	LRAIC	Current cost	Hybrid	✓	✓	✓	✓
Switzerland	Cost based	FL-LRIC	Current cost	Bottom-up	✓	✓	✓	×
Turkey	Cost based	LRIC	Current cost	Bottom-up	✓	✓	✓	×
United Kingdom	Cost based	FAC	Current cost	Bottom-up	✓	✓	×	✓
US States	Cost based	TELRIC	Current cost	Bottom-up	×	✓	×	✓

Denotes countries that are currently considered to meet the forward-looking cost-based (FLCB) screening criteria

Denotes countries that also met the FLCB criteria in the 2007 UCLL STD

Notes:

- The primary source for information regarding whether “unbundling is operational and loops have been unbundled” is Table 2.8 of OECD Communications Outlook 2011.
- **Turkey:** Turkey has been added as a county meeting the forward-looking cost-based benchmarking criteria since the revised draft determination. See paragraphs 97 to 100 above.
- **Macedonia:** Macedonia has been added as a county meeting the forward-looking cost-based benchmarking criteria since the revised draft determination. See paragraphs 97 to 100 above.

- **Ireland:** Ireland meets the forward-looking cost-based benchmarking criteria. However, Ireland has been excluded from the benchmarking data set because exchanges that are unlikely to be "economically and commercially feasible for unbundling" have been excluded from the LRIC model.[210]

[210] ComReg, *Response to Consultation Documents No. 09/39 and 09/62: Local Loop Unbundling ("LLU") and Sub Loop Unbundling ("SLU") Maximum Monthly Rental Charges*, 9 February 2010, page 4, paragraph 1.13.

Attachment B: Raw benchmarking approach

Purpose

360. This section applies the raw benchmarking approach to updating UCLL monthly rental prices. The outcome of the raw benchmarking approach is presented.

Comparability criteria under the raw benchmarking approach

361. Under the raw benchmarking approach, the population density comparability criterion is removed. Only the urbanisation and teledensity criteria apply.

362. Therefore, the following criteria are used to identify countries that are comparable to New Zealand:

    362.1 urbanisation greater than or equal to 60%

    362.2 teledensity between 20% and 60%.

363. 10 of the 13 countries that apply a forward-looking cost-based pricing methodology meet these comparability criteria. Macedonia, Romania and Slovenia all fail to meet the urbanisation criterion.

364. No correction is made for the expected downwards bias associated with removing the population density comparability criterion and excluding US states under the raw benchmarking approach.

Benchmarking data set under the raw benchmarking approach

365. The benchmarked prices for the 10 countries that meet the urbanisation and teledensity comparability criteria are included in Table 11 below.

Table 11: Monthly rental benchmark set under the raw benchmarking approach

Country	Currency	Monthly rental (local currency)	Blended FX rates	Monthly rental ($NZ)
Belgium	EURO	8.03	0.55	14.73
Denmark	DKK	68.33	4.51	15.16
Greece	EURO	7.78	0.49	15.78
Sweden	SEK	88.33	5.37	16.44
Switzerland	CHF	15.50	0.88	17.58
Turkey	TRY	14.62	0.83	17.63
Italy	EURO	9.28	0.52	17.75
Germany	EURO	10.08	0.52	19.28
Czech Republic	CZK	242.00	11.93	20.29
Cyprus	EURO	9.96	0.49	20.47

Mean	17.51
Median	17.60
25th percentile	15.95
75th percentile	18.90

366. The main changes from the revised draft determination are:

366.1 Turkey has been added to the benchmark set in response to the submissions from Vodafone and Network Strategies.[211]

366.2 The monthly rental price for Belgium has been updated from 7.78 to 8.03 EURO.[212]

366.3 The monthly rental price for Greece has been updated from 8.36 to 7.78 EURO in response to submissions from Vodafone and CEG.[213]

366.4 The monthly rental price for Italy has been updated from 9.02 to 9.28 EURO in response to the submission from CEG.[214]

366.5 The monthly rental price for Cyprus has been updated from 9.91 to 9.96 EURO in response to the submission from CEG.[215]

---

211 The reasons for adding Turkey to the benchmark set are discussed in paragraphs 97 to 100 above.

212 See page 2 of the following document for the updated Belgian monthly rental price: http://www.bipt.be/GetDocument.aspx?forObjectID=3638&lang=fr

213 CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, page 23, paragraph 92; Vodafone, *Submission on the revised draft determination on the benchmarking review for the unbundled copper local loop service (UCLL)*, 1 June 2012, page 14, paragraph 36.

214 CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, page 23, paragraph 92.

215 CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, page 23, paragraph 92.

367. The raw benchmarking approach results in a reduction of approximately 30% from the current geographically averaged UCLL monthly rental price of $24.46. The mean of the raw benchmarking data set $17.51 and the median is $17.60.

Attachment C: Approach to currency conversion

Purpose

368. This attachment explains the Commission's approach to currency conversion in this determination. It describes the reasons for retaining the previous approach of a 50/50 blend of PPPs for GDP and nominal exchange rates.

Currency conversion used in the revised draft determination

369. In the revised draft determination the Commission used a 50/50 blend of purchasing power parity (PPP) and 10 year average market exchange rates to convert benchmarked UCLL monthly rental prices from local currency into New Zealand dollars.[216]

370. The Commission noted that the blended approach to currency conversion reflects the components of the UCLL monthly rental service. Approximately 50% of local network costs relate to non-tradeable components (such as labour), and the other 50% relate to tradeable capital inputs.

371. This approach to currency conversion is consistent with the approach used in the original UCLL STD (and all subsequent STDs).

Sector-specific PPP rates

CEG submission on sector-specific PPPs

372. In their submission, CEG submitted that the Commission's approach to currency conversion could be improved by using sector-specific PPP rates, instead of PPPs for GDP. CEG argued that PPPs for GDP are "economy-wide measures that can prove highly inaccurate as a measure of relative prices between countries for inputs into a particular industry".[217]

373. CEG submitted that PPP rates produced by the OECD for "machinery and equipment" and "construction" should be used:[218]

> …we consider that a reasonable (if somewhat conservative) assumption is that 75% of the TSLRIC costs of UCLL will reflect relative prices for construction services and 25% will reflect relative prices for equipment goods. While the use of such a blended PPP is unlikely to represent a perfect match for the input prices for local loop services, we consider it that is likely to be far more representative than the Commission's proposed blended rate approach based on PPPs for GDP as a whole.

374. The 75%/25% ratios for construction and equipment respectively were based on two sources.

    374.1 A submission from Telecom which stated that "up to 80% of TSLRIC costs relate to civil engineering and labour related costs".[219]

---

216 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012, page 40, paragraphs 183-184.

217 CEG, *Benchmarking UCLL prices for New Zealand*, June 2012, page 5, paragraph 19.

218 CEG, *Benchmarking UCLL prices for New Zealand*, June 2012, page 7, paragraph 27.

374.2 Information on the Danish fixed line cost model, which was included in WIK-Consult's report.[220]

375. In respect of the Danish model, CEG stated:[221]

> WIK reports that in the Danish fixed line cost model, 47.6% of access network costs are comprised of trenching and ducting, 20.4% are operational costs ("such as fault repair, preventative maintenance, power consumption") and 14.4% are overhead ("such as accounting, human resources etc"). Thus over 80% of costs are accounted for by expenditures that are predominantly non-tradeable and which will largely reflect local labour costs and to a smaller extent equipment costs. The remaining significant cost categories relate to cable and distribution points which can be expected to comprise mainly equipment costs.

376. According to CEG, the PPPs for "construction" and "machinery and equipment" include both domestically sourced and imported inputs, so there is no need to use a separate blended exchange rate.[222] However, the latest available estimates of PPPs for these categories are for 2008, so CEG recommended using the growth in relative GDP deflators to calculate PPPs for 2011.[223]

377. CEG also submitted that the harmonic, rather than arithmetic, mean should be used when averaging exchange rates.[224]

Responses to CEG's submission on sector-specific PPPs

378. Covec agreed in principle that using sector PPPs instead of PPPs for GDP is preferable for cost benchmarking. However, they noted that the accuracy of PPPs depends on the comparability across countries of the basket of goods and services used to calculate the PPP rate, and collecting sufficiently comparable data is difficult for specialised industries.

379. Covec noted that, in contrast, the broad base of the basket used to calculate PPPs for GDP reduces this problem. Therefore, they concluded that there is no strong evidence that sector PPPs will be more reliable than PPPs for GDP in this case.[225]

380. NERA agreed that, in principle, it is appropriate to adjust prices by a measure that most closely matches the goods/services that are being priced. However, they recommended exercising caution with CEG's proposed sector-specific PPP approach for the following reasons.[226]

380.1 It is likely that there are some UCLL costs (eg operational costs and overheads) that will not be covered by construction and machinery PPPs.

---

219 Telecom, *Submission: UCLL re-benchmarking discussion paper*, 7 March 2012, page 2.
220 WIK-Consult, *UCLL cost drivers and comparability criteria*, 27 April 2012, page 5, table 2-1.
221 CEG, *Benchmarking UCLL prices for New Zealand*, June 2012, page 7, paragraph 26.
222 CEG, *Benchmarking UCLL prices for New Zealand*, June 2012, page 7, paragraph 24.
223 CEG, *Benchmarking UCLL prices for New Zealand*, June 2012, page 7-8, paragraphs 28-30.
224 CEG, *Benchmarking UCLL prices for New Zealand*, June 2012, page 8-10, paragraphs 31-34.
225 Covec, *UCLL benchmarking review: Cross-submission*, 15 June 2012, page 10, paragraph 46.
226 NERA, *Review of the Commerce Commission's UCLL benchmarking*, 15 June 2012.

380.2 The sectoral PPPs that CEG uses are only available for 2008, so are adjusted to 2011 values using economy-wide GDP deflators, which may undermine the purpose of using sector-specific PPPs in the first place.

381. Network Strategies disagreed with CEG that the use of a blend of PPPs relating to construction services and equipment goods qualifies as representative of UCLL inputs:[227]

> Just as the composition of the 'PPP basket' is different to the composition of required inputs for the provision of UCLL services, so too are construction and machinery and equipment prices. There is no published subset of the PPP basket which would constitute an appropriate telecommunications index for the purpose of benchmarking UCLL.

382. Network Strategies submitted that both specific telecommunications inputs as well as non-telecommunications-specific inputs are involved in producing UCLL services, so an ideal index would include mix of telecommunications and non-telecommunications items. On this basis, they concluded that a wider PPP basket may be appropriate than an index based on machinery and construction.[228]

383. Further, Network Strategies stated that although PPPs based on machinery and construction have been available for many years, they found no examples of their application in telecommunications benchmarking. Rather, the wider PPP basket is typically applied in international benchmarking of telecommunications prices.[229]

Commission view on sector-specific PPPs

384. The Commission disagrees with CEG's proposed approach of using sector-specific PPPs to convert the benchmarked prices to New Zealand dollars.

385. The Commission has an established methodology for currency conversion, that was used in the 2007 UCLL STD. The Commission considers that there is no compelling reason to depart from the established approach in this case.

386. The Commission has the following concerns regarding sector-specific PPPs in the context of this benchmarking review.

386.1 There is complexity associated with the calculation of sector-specific PPPs that may undermine their accuracy.

386.2 It is not clear that PPPs for "construction" and "machinery and equipment" are representative of UCLL inputs.

---

227 Network Strategies, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2012, page 5.

228 Network Strategies, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2012, page 6.

229 Network Strategies, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2012, page 6-7.

387. As an example regarding the complexity of sector-specific PPPs, the OECD/Eurostat methodological manual explains how PPPs for the construction industry are calculated. The difficulty in achieving comparability between countries is highlighted:[230]

> In practice the complexity and the country-specific nature of the products of the construction industry make it difficult to achieve both complete comparability and representativity in the same comparison.

388. It is also not clear that the PPPs for construction and machinery referred to by CEG are representative of inputs to the UCLL service. For example, the standard projects that are used when calculating PPPs for the construction sector are listed in Figure 1 below.[231]

Figure 1: Standard construction projects used to calculate PPPs for the construction sector

	15.02.11.0 Residential buildings
01.	European single-family house
02.	Portuguese single-family house
03.	Nordic single-family house
04.	Apartment in a multi-apartment building
05.	*North American single-family house*
06.	*Japanese single-family house*
07.	*Australasian house*
	15.02.21.0 Non-residential buildings
08.	Agricultural shed
09.	European factory building
10.	Office building
11.	Primary school
12.	*Japanese factory building*
	15.02.31.0 Civil engineering works
13.	Asphalt road
14.	Concrete road
15.	Bridge
16.	Concrete main sewer

The choice of pricing projects 05, 06, 07 and 12 is restricted to countries working directly with the OECD.

389. From this, it seems unlikely that construction PPPs will be representative of the UCLL service. The vast majority of these construction projects relate to residential and non-residential buildings, which differ significantly from deploying a local loop network.

Other suggested modifications to the Commission's approach

CEG submission

390. CEG submitted that if the sector-specific PPP approach outlined above is not adopted, a number of modifications are required to the Commission's existing approach to improve its accuracy.

391. They suggested the following modifications:[232]

---

230 Eurostat-OECD, *Methodological Manual on Purchasing Power Parities*, 2006, page 115, paragraph 6.24.
231 Eurostat-OECD, *Methodological Manual on Purchasing Power Parities*, 2006, page 116, box 6.3.
232 CEG, *Benchmarking UCLL prices for New Zealand*, June 2012, page 14-15, paragraphs 39-47.

391.1 altering the proportions of the blend between the nominal exchange rates and PPP for GDP rates to 75% PPP and 25% nominal exchange rate, based on the evidence from Telecom and WIK outlined in paragraph 374 above

391.2 updating the PPP rates from 2010 to 2011 values, because 2011 PPPs for GDP are now available from the IMF

391.3 calculating the harmonic mean rather than the arithmetic mean blended exchange rate

391.4 using forward-looking nominal exchange rates, because the Commission is aiming to determine a forward-looking cost for UCLL which will take effect in December 2014.

75%/25% weighting for PPPs and nominal exchange rates

392. In response to CEG's submission, NERA agreed that a weighting of 75% PPPs and 25% nominal exchange rates is appropriate.[233]

393. Network Strategies, on the other hand, submitted that they have a theoretical objection to the use of any blend of PPP exchange rates and nominal exchange rates for currency conversion, and instead recommend using 2011 PPP rates only.[234]

394. The 75%/25% weightings proposed by CEG are based primarily on the results of one LRIC cost model (the Danish model). The information on the Danish model relied on by CEG is presented in Table 12 below.[235]

Table 12: Composition of access network cost in Danish cost model

Cost	Percentage of total cost	Absolute annual cost (MDKK)
Trenching, ducting	47.6%	965
Cable	11.8%	239
Distribution points	5.4%	110
Operational cost	20.4%	413
Overhead	14.4%	293
Other costs (Customer oriented costs, Billing, Debtor handling)	0.4%	8

395. CEG added up the proportions of trenching and ducting (47.6%), operational costs (20.4%) and overhead costs (14.4%). They concluded that "…over 80% of costs are accounted for by expenditures that are predominantly non-tradeable and which will largely reflect local labour costs and to a smaller extent equipment costs".[236]

233 NERA, *Review of the Commerce Commission's UCLL benchmarking*, 15 June 2012.
234 Network Strategies, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2012, page 8.
235 WIK-Consult, *UCLL cost drivers and comparability criteria*, 27 April 2012, page 5, table 2-1.
236 CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, page 7, paragraph 26.

396. The Commission has two main concerns with CEG's conclusion.

 396.1 The analysis is based on only one LRIC cost model, and it is not clear whether those cost proportions are consistent across countries.

 396.2 CEG assumes that the cost categories referred to (trenching and ducting, operational cost and overheads) are dominated by labour costs. For example, although in the Danish model 47.6% of costs are attributed to trenching and ducting, not all of the 47.6% will be accounted for by labour costs.

397. Therefore, due to the lack of any compelling evidence to the contrary, the Commission has retained the 50/50 blend of PPPs for GDP and nominal exchange rates.

Updating PPPs from 2010 to 2011 values

398. NERA submitted that since most of the benchmarked prices are for 2011, and those that are not are prices from late 2010, 2011 PPPs should be used.[237]

399. Network Strategies agreed that PPP rates from 2011 should be used in preference to 2010.[238]

400. The Commission agrees that 2011 PPP rates should be used in preference to 2010 rates. 2011 PPPs for GDP sourced from the World Bank have been used in this final UCLL benchmarking review determination.

Harmonic versus arithmetic mean

401. Covec submitted that the nominal and PPP exchange rates used by the Commission are units of foreign currency per NZD, not NZD per unit of foreign currency as indicated in CEG's report. On this basis, Coved argued that the averaging approach used by the Commission is correct and the harmonic mean would not be appropriate.[239]

402. NERA agreed with CEG that the harmonic mean is the most appropriate averaging method for exchange rates.[240]

403. Network Strategies submitted that effective exchange rates are often issued by central banks – such as the Reserve Bank of New Zealand, the US Federal Reserve and the European Central Bank – and other organisations like the OECD, and in these cases weighted geometric means are used. Network Strategies stated that they were

[237] NERA, *Review of the Commerce Commission's UCLL benchmarking*, 15 June 2012.
[238] Network Strategies, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2012, page 7.
[239] Covec, *UCLL benchmarking review: Cross-submission*, 15 June 2012, page 10, paragraph 46.
[240] NERA, *Review of the Commerce Commission's UCLL benchmarking*, 15 June 2012.

not able to find any official examples of the harmonic mean being used for calculating weighted averages of exchange rates.[241]

404. There are conflicting views on whether the harmonic or arithmetic mean should be used. For consistency, and in the absence of compelling evidence to the contrary, the Commission has retained the approach used in the 2007 UCLL STD.

Forward-looking exchange rates

405. Covec disagreed with CEG's suggestion to use exchange rate futures rather than historic long-term average nominal exchange rates. Covec submitted that exchange rate future at any given point in time are subject to similar degrees of random fluctuations that affect spot rates, and if forward rates were to be used then long-term averages would need to be used to minimise the effects of random fluctuations on the benchmarks.[242]

406. The Commission has not used forward-looking exchange rates in this determination.

407. Although the geographically averaged UCLL monthly rental price does not take effect until 1 December 2014, the updated urban and non-urban prices will apply immediately. Therefore, CEG's argument for using forward-looking exchange rates (ie that the updated prices will not take effect until December 2014) is incorrect.

241 Network Strategies, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2012, page 4.

242 Covec, *UCLL benchmarking review: Cross-submission*, 15 June 2012, page 10, paragraph 46.

Attachment D: Econometric adjustment approach

Purpose

408. The purpose of this attachment is to explain how we carried out the econometric adjustment to normalise the 2012 benchmarking data.

409. The normalisation makes use of the econometric analysis undertaken in 2007[243] as well as amending the econometrics in light of revisions to the dataset. The purpose of the normalisation is to correct for the expected bias in the 2012 benchmark dataset.

410. This attachment lays out:

 410.1 the main revisions to the normalisation approach (from our revised draft determination);[244]

 410.2 the expected bias in the benchmarking data;

 410.3 the estimated prices resulting from the econometric adjustment approach; and

 410.4 analysis of the robustness of the econometric adjustments.

Revisions to the normalisation approach

411. The econometric adjustment approach used within this decision is an amended approach which differs to the analysis used in the revised draft determination. Table 13 below summarises the econometrically normalised prices.

Table 13: Normalised prices

Price point estimate	Revised draft determination	Mean	Median
Original 2007 data			
- including outliers	19.75	22.87	22.65
- excluding outliers	N/A	22.64	22.02
Revised 2007 data			
- including outliers	N/A	22.28	21.50
- excluding outliers	N/A	23.35	22.58
- excluding outliers from 2012 dataset	N/A	22.83	22.65

243 Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, paragraphs 161 to 164.

244 Commerce Commission, *Revised draft determination on the benchmarking review for the unbundled copper local loop service*, 4 May 2012.

412. There are three main differences from the normalisation carried out in the revised draft determination:

412.1 the impact of the US Dummy has been introduced;

412.2 the 2007 PPP rates have been corrected; and

412.3 the impact of regression outliers has been considered.

The US dummy variable

413. In response to the revised draft determination submissions raised the issue of the US dummy variable. The revised draft determination excluded the impact of the US dummy variable. This was queried and the inclusion of the US dummy variable was advocated.[245] We have concluded that the US dummy variable should be included.

Why are we including the US dummy variable?

414. The 2007 regression analysis identified that forward-looking cost-based UCLL prices for US states were significantly higher than elsewhere in the world.[246] This showed through in the US dummy variable in the regression analysis.

415. When we normalised the prices in the revised draft determination we excluded the impact of the US dummy variable and therefore were normalising prices to be equivalent to the prices excluding the US. This therefore lowered the price.[247]

416. As discussed in paragraph 143.2 above, excluding the US dummy reflected earlier submissions that the reduction in the average line length for the network to which the UCLL STD applies meant that the network is now more similar in cost characteristics to European networks. This was in contrast to the assumption in 2007 that the network was intermediate between the US and European networks in cost characteristics.

417. The price we are estimating in this review is an update of the benchmarked price in the 2007 UCLL STD. With the link between average copper loop length and forward-looking UCLL costs being uncertain, and absent evidence of an error in 2007,[248] the

245 Chorus, *Submission in response to the revised draft determination on the benchmarking review for the unbundled copper local loop service*, 1 June 2012, Appendix H, paragraphs 281 to 284.

246 Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, paragraph 160, bullet point three.

247 Several submissions rejected the idea of introducing the US Dummy, for example see Network Strategies, *UCLL re-benchmarking cross submission: A review of new issues*, 15 June 2012, page 33.

248 Network Strategies and Covec suggested that higher US prices may be due to longer loop lengths, see Network Strategies Limited, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2015, pages 20 and 21 and Covec, *UCLL Benchmarking Review: Cross-Submission*, 15 June 2012 footnote 3. We note that the submission from CEG contains information which suggests that the evidence on US loop lengths is not representative of the dataset, see CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, paragraphs 55 to 71.

Commission considers that its approach should be consistent with the 2007 decision.[249] Therefore we have concluded that the US dummy should be included.

How did the US dummy variable affect the 2007 decision?

418. The 2007 decision directly estimated the prices predicted by the 2007 econometrics considering New Zealand both as more akin to US and non-US observations. These two prices were averaged to arrive at a mid-point estimate of $24.74 for New Zealand.[250]

419. This mid-point estimate was used as a cross-check against the price derived from directly benchmarking the 2007 data after applying the comparability criteria (ie the peer group benchmarking approach).

How have we applied the US dummy variable to this decision?

420. The Commission has considered two options for applying the US dummy variable within the normalisation of the dataset.

  420.1 Firstly, CEG suggested applying half of the impact of the dummy variable to the normalisation.[251] This is equivalent to multiplying the US dummy variable by 0.5.[252]

  420.2 Secondly, we considered estimating the 'normalised' price for each benchmark country including and excluding the US dummy variable, then taking the mid-point of these estimates.

421. We have adopted the mid-point estimate, because this is more consistent with the 2007 decision. Given it is unknown whether New Zealand is more akin to the US or other countries, a mid-point should be taken.

---

249 Some submissions suggested that the 2007 decision was wrong and we did not need to be consistent with the 2007 UCLL STD. In particular, it was suggested that it was wrong to include the US dummy (in part) in determining the price for New Zealand. We note that at the time the Commission was transparent that there was no evidence suggesting whether New Zealand costs were closer to the US or other countries and that a mid-point would be used. No further evidence on this has been presented other than the US loop lengths (which is discussed in footnote 248) and in these circumstances we see no rationale for moving from the 2007 decision on this point.

250 Commerce Commission, Decision No. 609: *Standard terms determination for the designated service Telecom's unbundled copper local loop network*, 7 November 2007, paragraph 188. This does differ to a methodology of applying a factor of 0.5 to the US dummy, however the approaches are very similar.

251 CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, paragraph 73.

252 We have considered the objections placed against this during consultation, in particular that a dummy variable cannot take the value of 0.5 and that doing so implies the regression is mis-specified. See Network Strategies, *UCLL re-benchmarking cross-submission: A review of new issues*, 15 June 2015, pages 17 to 22 and Covec, *UCLL Benchmarking Review: Cross-submission*, 15 June 2012, paragraphs 32 to 39. Where we are required to arrive at a price and we do not know which of two different prices are more representative of New Zealand, taking a mid-point between the two is consistent with benchmarking. Furthermore, we believe this is consistent with the 2007 decision.

Correction to 2007 PPP rates

422. In submissions by Network Strategies, it was pointed out that the dataset used in 2007 applied a European average PPP rate whereas the 2012 benchmark data uses country-specific PPP rates.[253] They recommended that country-specific PPP rates be used for the 2007 dataset.

423. This issue was raised at the UCLL conference and participants agreed that the 2007 PPP rates should be corrected.[254]

424. The Commission agrees that country-specific PPP rates should be used for the 2007 data set.

Regression outliers

425. Several submissions queried the robustness of the 2007 econometrics.[255] In response, we have carried out several tests on the econometric regression including testing for regression outliers.

426. These tests indicated that both the original 2007 dataset and the amended 2007 dataset contain some potential outliers. Within this attachment we have reported the estimated prices both including and excluding the outliers.[256]

Expected bias in the benchmarking data

427. The purpose of the normalisation of the 2012 dataset is to correct for expected bias in the dataset. This expected bias occurs because, whilst in 2007 we found that population density was an important cost driver for UCLL, the 2012 benchmark data set contains countries that do not meet the population density comparability criterion used in the 2007 UCLL STD.

428. We have three data sets in this analysis:

428.1 the 2007 regression dataset, comprised of 60 countries and US states with forward-looking cost-based UCLL prices;

428.2 the 2007 benchmark dataset, comprised of 10 countries and US states from within the regression dataset that were considered comparable to New Zealand; and

---

[253] Network Strategies, *Benchmarking for the unbundled copper local loop service: comments on the revised draft determination*, 31 May 2012, page 16.

[254] Commerce Commission, *UCLL benchmarking review conference transcript*, 19-20 September 2012, pages 109 to 113.

[255] See Network Strategies Limited, *Benchmarking review for the unbundled copper local loop service: Comments on the revised draft determination*, 31 May 2012, Covec, *Unbundled Copper Local Loop Service Benchmarking Review: Response to Revised Draft Determination*, 31 May 2012 and NERA, *Review of the Commerce Commission's UCLL Benchmarking: Report for Telecom New Zealand*, 15 June 2012.

[256] We have defined an outlier as a data point which is indicated as an outlier by two or more of our four tests. See paragraphs 444.3 and 446 below.

428.3 the 2012 benchmark dataset, comprised of 10 countries with forward-looking cost-based prices which meet the teledensity and urbanisation comparability criteria.[257]

429. The 2007 regression dataset was used for the 2007 econometric analysis. This analysis found population density to be a significant driver of forward-looking UCLL costs.

430. The 2007 benchmark dataset contained six US States in arriving at the 2007 UCLL monthly rental price. The 2012 benchmark dataset no longer contains any US states and all but one country fails to meet the population density comparability criterion used in 2007.

431. In strict comparison to the methodology used in 2007 there are therefore two expected biases in the 2012 benchmark dataset.

431.1 The absence of US states where these prices are expected to be higher than prices elsewhere in the world. This would bias prices downwards.

431.2 The inclusion of countries who do not meet the 2007 population density criterion. Given these countries have a higher population density than New Zealand we would also expect this to bias prices downwards.[258]

432. We use the econometric normalisation to control for these two factors.[259]

Estimated prices under the econometric adjustment approach

433. Using the revised analysis we have estimated several prices. These are shown in Table 14 below.

---

[257] We considered whether we should also include Macedonia, Romania and Slovenia (which fail the comparability criteria) given we normalise those data points. Given we are only applying the normalisation due to removal of the population density criteria we do not believe it appropriate to relax all comparability criteria and rely on the econometric adjustment alone.

[258] A high population density is expected to make the build costs per user less expensive.

[259] Some submitters raised the issue that bias will occur in both directions because some of the countries in the 2012 dataset have teledensity or urbanisation parameters which indicate they should have a higher price than New Zealand. We note that the econometric adjustment works across all three parameters and that consequently it specifically deals with this issue.

Table 14: Estimated price points from the normalised benchmark data set

Price point estimate	Midpoint estimate	
	Mean	**Median**
Original 2007 data		
- including outliers	22.87	22.65
- excluding outliers	22.64	22.02
Revised 2007 data		
- including outliers	22.28	21.50
- excluding outliers	23.35	22.58
- excluding outliers from the benchmark set	22.83	22.65

434. Below we describe how we estimated these price points.

How did we normalise the benchmark data set?

435. Normalising the benchmark data set is a process by which we alter the prices reported for each country so they are more representative of New Zealand. This is based upon the three comparability criteria identified in 2007: population density; urbanisation and teledensity.

436. The prices are altered by the proportions predicted by the 2007 econometric equation.[260]

437. Table 15 below provides the prices before and after normalisation, for the 2007 data unadjusted for PPP updates and including potential outliers.[261]

[260] CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, paragraphs 96 to 98. We note the intercept term is an important part of the prediction of price and allowing this to vary to changes between the 2007 and 2012 datasets allows for the most recent data to influence a large proportion of the price.

[261] Similar calculations are carried out for the adjusted 2007 dataset and the datasets with outliers excluded.

Table 15: Normalisation of prices

Country	Reported price (NZ$)	Estimated price (NZ$)[1]	Revised price (NZ$) (non-US)	Revised price (NZ$) (US)	Midpoint
New Zealand (non-US)		21.01	-	-	
New Zealand (US)		24.33			
Belgium	14.73	15.69	19.73	26.46	23.10
Denmark	15.16	17.24	18.47	24.78	21.62
Sweden	16.44	19.59	17.64	23.66	20.65
Greece	15.78	20.08	16.51	22.15	19.33
Italy	17.75	19.36	19.26	25.83	22.55
Switzerland	17.58	16.81	21.97	29.48	25.72
Germany	19.28	16.62	24.37	32.69	28.53
Cyprus	20.47	19.72	21.81	29.25	25.53
Czech	20.29	21.93	19.44	26.07	22.76
Turkey	17.63	22.94	16.14	21.65	18.90
Mean					22.87
Median					22.65

Note 1: the estimated price is the price estimated for this country given their population density, urbanisation and teledensity.

438. The steps undertaken in the normalisation process used in this determination are:

438.1 amending the PPP rates for the 2007 dataset;

438.2 re-estimating the econometric equation;

438.3 testing the econometric equation for the presence of outliers and multi-collinearity;

438.4 using the econometric equation to normalise the 2012 dataset; and

438.5 benchmarking against the normalised 2012 dataset.

How did we amend the PPP rates for the 2007 dataset?

439. PPP rates sourced from the World Bank have been used when carrying out the adjustment to the 2007 PPPs.[262] For three European countries this also required

[262] In extracting this data it became apparent that the 2006 PPP rates used had been revised and that other small differences also impacted on other countries, for example the US. We have used the most up to date estimate of country-specific PPP rates for this analysis.

sourcing exchange rate data and the UCLL price in local currency.[263] The adjusted data for these countries is shown in Table 16 below.

Table 16: PPP and other adjustments to the 2007 dataset[264]

	Denmark	Sweden	Czech Republic
UCLL rental price			
- 2007 decision (euros)	8.60	9.00	12.70
- revised data (local currency)	64.17	81.00	360.00
10 year exchange rates			
- 2007 decision (euro:NZ$)	0.51	0.51	0.51
- revised data (local currency:NZ$)	3.82	4.63	16.80
PPP rates			
- 2007 decision (eurozone)	0.59	0.59	0.59
- revised data (local rates)	5.60	6.11	9.44
UCLL rental price NZ$			
- 2007 decision	15.57	16.30	23.00
- revised data	13.63	15.09	27.44

440. Revising the 2007 dataset also required us to re-estimate the econometric equation, which was previously derived from the 2007 data set. The impact on the equation is shown in Table 17 below.

Table 17: The impact of revising the 2007 dataset

Co-efficient	Estimated parameter	
	2007	Revised data
Population Density	-0.081	-0.072
Teledensity	-0.261	-0.322
Urbanisation	-0.319	-0.360
Constant	3.002	2.920
US Dummy	0.29	0.30

263 The 2007 decision used a Euro-zone PPP rate and for these countries euro to New Zealand exchange rates. Some of these countries maintained local currency as they were not members of the Eurozone.

264 2006 PPP rates have been used. Data for the 10 year exchange rates was sourced from: www.oanda.com/currency/historical-rates/. Data on UCLL rental prices in local currency is available at: http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/data_telkom_tariff_trends_1998-2009.xls .
The 2007 price has been used for Sweden to match up to the price used in the 2007 dataset. For Denmark and the Czech Republic the October 2006 prices are used to match the original 2007 dataset.

441. We have concluded that the revised data is the more accurate and therefore have used this data in carrying out the normalisation of the 2012 benchmark dataset.

How did we re-estimate the econometric equation?

442. Both the exclusion of outliers and the amendments to the 2007 dataset required us to re-estimate the econometric regression. This was carried out using the STATA software[265] using Ordinary Least Square (OLS) regression analysis.[266]

443. The results of this analysis are laid out in Table 18 below.

Table 18: Re-estimated econometric parameters

Co-efficient	Revised 2007 data[267]	
	With outliers	Excluding outliers
Population Density	-0.072	-0.079
Teledensity	-0.322	-0.340
Urbanisation	-0.360	-0.419
Constant	2.920	2.867
US Dummy	0.297	0.366

How did we test the econometric equation?

444. We tested the outcome of the econometric equation for significance, outliers and multi-collinearity.[268]

444.1 Given we have re-estimated the econometric equation we examined the t-statistics and F-statistic to examine the statistical significance.

444.2 We tested for multi-collinearity using variance inflation factors (VIF) and pearson correlation statistics.

444.3 We tested for outliers using a leverage test,[269] DFITs test[270], Welsch Distance test,[271] and Cooks Distance test.[272] All the co-efficients of the equations

265 STATA is a software package used widely by companies and academic institutions for econometric analysis.

266 For an explanation of OLS see Wooldridge, J.M., Introductory Econometrics: A Modern Approach, Thomson South-Western, 2003.

267 We note that whilst the co-efficients do change, the impact on the 2007 cross-check would be limited. In 2007 the cross check estimate a price of $24.74 against a final price of $24.29. The re-estimated equations with the revised data estimate prices of $24.67 and $24.43 both of which are closer to the final price determined in 2007.

268 Multi-collinearity is a statistical issue which can arise in regression analysis where the explanatory variables (in our case population density, urbanisation and teledensity) have a significant relationship between each other. Multi-collinearity technically refers to high but not perfect correlation between two or more of the explanatory variables. For an explanation see Gujarati, D.N., Basic Econometrics, McGraw-Hill, 2nd Edition, 1988.

269 The leverage test examines the influence of observations on the estimated relationship.

270 The DFITs test is a summary statistic of the leverage versus residual-squared plot.

estimated bar one were significant at the 1% level.[273] In addition the equations are performed well in terms of their F-statistic[274] and adjusted R-squares. [275]

Table 19: Significance testing

Regression	F-Stat	T-stat on coefficients	Adjusted R-squared
Revised 2007 data			
- unadjusted	23.37	Pass at the 1% confidence level	60%
- excluding outliers	34.10	Pass at the 5% confidence level	72%

445. None of the equations have indications that multi-collinearity was a significant issue.[276] We examined VIF statistics and pearson correlation between the explanatory variable data, neither indicated multi-collinearity is a concern.[277]

446. Regression outliers can be problematic because they are disproportionately influential on the regression results. We carried out four standard tests to determine whether data points are potential outliers. Data points were treated as outliers if they failed two or more of the outlier tests. For the revised dataset this indicated eight outliers.[278]

447. Some of these outliers seem to be unusual data points. We note that Ireland and Canada have been excluded from our current benchmark set, and Vermont is unusual in exhibiting high teledensity levels alongside low urbanisation and population density.

---

271 The Welsch Distance test is a variant of the DFITs test.

272 The Cook's Distance test is a variant of the DFITs test.

273 The co-efficient on Teledensity for the equation estimated using the 2007 data with adjusted PPPs and outliers excluded was significant at the 5% level.

274 For an explanation of the F-Statistic in regression analysis see Wooldridge, J.M., Introductory Econometrics: A Modern Approach, Thomson South-Western, 2003.

275 For an explanation of the adjusted R-squared in regression analysis see Wooldridge, J.M., Introductory Econometrics: A Modern Approach, Thomson South-Western, 2003.

276 Network Strategies raised concerns on multi-collinearity. See Network Strategies, *Benchmarking review for the unbundled copper local loop service: Comments on the revised draft determination*, 31 May 2012. CEG came to similar conclusions to the Commerce Commission, see CEG, *Benchmarking UCLL prices for New Zealand: A Report for Chorus*, June 2012.

277 We also considered whether the predicted values of the equation need modification due to the log transformation which can introduce a downward bias in predicted values. Typically this bias is small and given how we normalise prices this bias has no impact. For more information on this issue see Wooldridge, J.M., Introductory Econometrics: A Modern Approach, Thomson South-Western, 2003, page 206 to 209.

278 Canada, Vermont, Ireland, Nevada, Czech Republic, Finland, Germany and Sweden.

448. The remaining outliers appear more problematic. In particular Germany, the Czech Republic and Sweden have been identified as regression outliers.[279]

449. Within this attachment we report prices including and excluding potential outliers. Just because a data point is identified as an outlier does not necessarily imply it should be excluded.

450. We have considered whether or not we should exclude outliers and concluded that, for our purposes outliers should be excluded from the econometric regression. The main reasons for this are as follows.

   450.1 Regression outliers disproportionally affect the regression parameters. Given that the regression results are used to normalise the 2012 benchmark data set, this will feed through to all prices that are used for benchmarking under the econometric adjustment approach.

   450.2 The exclusion of outliers slightly reduces the size of the 2007 regression dataset from 60 to 52 observations. Once the outliers are excluded the regression should be the best linear unbiased estimator.

451. Three of the excluded outliers from the revised 2007 data set are included in the 2012 benchmark dataset (Germany, the Czech Republic and Sweden). Therefore, in the normalisation process these countries would have their price adjusted using a mechanism which has identified them as outliers in 2007.

452. Consequently we have examined the results of the econometric adjustment approach both with and without regression outliers included in the 2012 benchmark dataset.

453. Neither approach is clearly superior to the other. The fact that a country is identified as an outlier in 2007 does not mean that the 2012 data point is incorrect or that the econometric equation does not apply to that country.[280] However, given that we use the econometric equation to 'normalise' each country's 2012 price to be representative of New Zealand, there is greater potential for the normalisation to result in error when it is applied to countries that have been identified as outliers.

454. This concern needs to be traded off against the potential for exclusion of outliers to eliminate valuable information from the benchmark set. The 2012 benchmark set is already limited to 10 countries, and excluding outliers reduces the sample size to seven.[281]

---

279 It is noticeable that two of the three countries for which substantial revision to the dataset was carried out subsequently became potential outliers.

280 There is a substantive difference between an outlier's impact on an estimated regression and applying the results of regression to an outlier. Regression outliers have a disproportional impact on the estimated equation and error here would feed through to all the normalised data points.

281 We note that in practice the two estimates are within 50 cents of each other.

How did we normalise the 2012 dataset?

455. The normalisation of the 2012 dataset was carried out by:

455.1 using the econometric regression to predict the price for each of the countries in the 2012 benchmark dataset using their country characteristics;

455.2 comparing the price for each country in the 2012 benchmark dataset to the predicted price for New Zealand. From this we can estimate how much we can expect that price to change if each country in the 2012 dataset had the same characteristics as New Zealand; and

455.3 amending the price for each country in the 2012 dataset accordingly.

456. The normalisation was carried out by separately setting the US dummy variable to 1 and 0 when predicting the New Zealand price, and the midpoint of predicted effects on other countries was taken. The results are summarised in Table 20 below.

Table 20: Normalisation of the 2012 dataset

Country	Unaltered price (NZ$)	Revised data	Revised data excluding outliers	Revised data excluding outliers from the 2012 benchmark set
Belgium	14.73	22.62	24.26	24.26
Denmark	15.16	21.39	22.65	22.65
Sweden	16.44	20.88	21.84	
Greece	15.78	18.88	19.52	19.52
Italy	17.75	21.60	22.52	22.52
Switzerland	17.58	25.47	26.88	26.88
Germany	19.28	28.15	29.74	
Cyprus	20.47	24.69	25.71	25.71
Czech	20.29	21.38	22.13	
Turkey	17.63	17.76	18.30	18.30
Mean		22.28	23.35	22.83
Median		21.50	22.58	22.65

How did we benchmark the normalised 2012 dataset?

457. The resulting 2012 datasets were then benchmarked to arrive at a revised UCLL monthly rental price by taking the mean and median of the benchmark set.

Robustness of the econometric adjustments

458. Submissions on the revised draft determination raised several critiques and suggested amendments to the econometric estimation and subsequent normalisation of prices. These can be summarised as:

458.1 the use of the US dummy; and

458.2 potential problems and alternative econometrics estimation.

459. The approach to the US dummy is explained in paragraphs 413 to 421 of this attachment. This rest of this section lays out our analysis on the potential problems and alternative econometric estimation.

Potential problems and alternative econometric estimation

460. The submission process provided a large number of comments on the econometrics. We do not address all of these comments within this attachment but deal with the most significant ones here.

Robustness of the econometrics

461. A key issue that has been raised is the underlying assumption that the relationship between the cost drivers (population density, teledensity and urbanisation) and forward-looking costs remains the same between 2007 and 2012.[282]

462. This is one of the underlying assumptions in applying the 2007 econometric regression analysis to the 2012 data points. The Commission notes that:

462.1 we would expect some change in the overall level of costs over a five year period;

462.2 the method we use to normalise the data holds constant the proportionate **change** in forward-looking cost to a **change** in the comparability criteria estimated in the 2007 econometrics;

462.3 it does allow the overall **level** of forward-looking costs to change based on the 2012 data points;[283] and

462.4 the alternative approach of raw benchmarking is known to have problems due to the exclusion of US states and population density which leads to a very large implied change in cost which would be due to a change in the composition of the benchmark dataset rather than change in forward-looking costs.[284]

463. Several submissions queried the robustness of the 2007 econometrics.[285] As described in paragraphs 444 to 454, we have carried out tests on the econometrics.

---

282 For example see Network Strategies Limited, *Benchmarking review for the unbundled copper local loop service: Comments on the revised draft determination*, 31 May 2012.

283 Technically the intercept point is allowed to vary. If this was not the case the econometric adjustment would arrive at the same price as estimated in 2007 (subject to minor changes in some of the comparability criteria measures for New Zealand between 2007 and 2012).

284 The loss of US data points and inclusion of data points which do not meet the 2007 population density comparability criteria.

285 See NERA, *Review of the Commerce Commission's UCLL benchmarking: Report for Telecom New Zealand*, 15 June 2012; Covec, *Unbundled copper local loop service benchmarking review: Response to revised draft*

Whilst this raised some issues would found no serious statistical flaw issues. We also note that the 2007 benchmarking process was a very robust process that placed this work under a great deal of scrutiny. We have concluded that we should revise the 2007 dataset in light of submissions on PPP rates that were used. We have also excluded outliers from the regression analysis.

464. Submissions also queried the weight that could be placed on the econometrics given it was a poor predictor of 2012 prices.[286] As explained in sub-paragraph 462.3, the normalisation deliberately allows the price to vary in response to the 2012 data. If it did not do this we would be benchmarking 2007 forward-looking costs. Consequently the ability of the econometrics to predict 2012 prices would only be a relevant criteria if we had evidence that forward-looking costs had not changed, in which case no revision to the price would be necessary.

465. We are satisfied that the econometric equation addresses the comparability issue of the 2012 benchmark data set. One submission noted that the econometrics does not support the use of the comparability criteria given that these explanatory variables only explain a small proportion of the predicted price for New Zealand.[287] Whilst it is true that these criteria explain only a small proportion of the predicted price for New Zealand, this is not a cause for concern. Taking the range of characteristics in the 2012 data set we find the predicted price can vary from $18.20 to $29.80, a spread of over 60%.

466. We have considered the ‘out of sample’ issue raised and have concluded this does not seriously undermine our results. The ‘out of sample’ issue is that for some of the countries in the 2012 dataset, their characteristics are outside the bounds of the 2007 econometric dataset. For example, Belgium’s urbanisation levels are higher than any of the other countries within the 2007 dataset.

467. We are satisfied that the degree to which observations are ‘out of sample’ is not severe. Where data points are ‘out of sample’, more caution needs to be applied in predicting their prices using the econometrics. For example, Belgium’s urbanisation is 97.4% in comparison to the highest urbanisation in 2007 of 96.3%.

468. In conclusion, the econometric adjustment is not without issue. However, these issues have to be considered in light of the alternative approaches, all of which have potential problems. We are satisfied that the econometric adjustment of the 2012 benchmark data set is a valid method to benchmark forward-looking UCLL costs.

Alternative econometric approaches

469. Two alternative econometric approaches were proposed:

---

determination, 31 May 2012, pages 4-5; and Network Strategies, *Benchmarking review for the unbundled copper local loop service: Comments on the revised draft determination*, 31 May 2012, pages 13-17.

[286] See Network Strategies, *Benchmarking review for the unbundled copper local loop service: Comments on the revised draft determination*, 31 May 2012, pages 13-17; and NERA*, Review of the Commerce Commission’s UCLL Benchmarking: Report for Telecom New Zealand*, 15 June 2012.

[287] Commerce Commission, *UCLL benchmarking review conference transcript*, 19-20 September 2012, page 97.

469.1 the incorporation of 2012 data into a panel data model;[288] and

469.2 an econometric estimation of the 2012 data.[289]

470. We have examined both of these approaches and have concluded that they contain significant problems.[290] The extent of these issues has led us to conclude they do not represent an improvement on our approach.

[288] CEG, *Benchmarking UCLL prices for New Zealand: A report for Chorus*, June 2012, pages 25-30

[289] Covec, *Unbundled copper local loop service benchmarking review: Response to revised draft determination*, 31 May 2012, page 5.

[290] The panel regression has a small number of cross sections which overlap between 2007 and 2012. This undermines the random effects model specification used in the CEG submission. We have examined whether alternative model specifications, such as a pooled model or between effects model specifications could circumvent these issues. Statistical testing proved that the data is not poolable and individual effects are not appropriate. Accordingly, alternative panel data model specifications are not robust. The 2012 econometric approach used in the COVEC submission has another issue in performing an econometric regression on a sample set which is too small to provide meaningful results.

Attachment E: Changes made to the UCLL and Sub-loop Services STDs as a result of the section 30R review

471. This attachment lists the changes that are made to the UCLL STD and the Sub-loop Services STD as a result of this UCLL benchmarking review determination.

UCLL STD Schedule 2 – UCLL Price List[291]	
Service component 1.1 MPF New Connection	Delete following text from column headed “Charge”: “$225 (individual new connection where site visit required) $74.83 (individual new connection where no site visit required) $56.12 (bulk rate for 20 or more simultaneous new connections at the same exchange where no site visit required)” and replace with following text: “$155.10 (individual new connection where site visit required) $70.46 (individual new connection where no site visit required) $52.84 (bulk rate for 20 or more simultaneous new connections at the same exchange where no site visit required)”.
Service components 1.2 MPF Transfer and 1.3 Other Service to MPF Transfer	Delete following text from column headed “Charge”: “$74.83 (individual transfer) $56.12 (bulk rate for 20 or more simultaneous transfers at the same exchange)” and replace with following text: “$70.46 (individual transfer) $52.84 (bulk rate for 20 or more simultaneous transfers at the same exchange)”.
Service component 2.1 MPF Service Monthly Charge	Delete following text from column headed “Charge”: “Geographically De-Averaged Price – Urban Exchange: $19.84[1]” “Geographically De-Averaged Price – Non-Urban Exchange $36.63” “Geographically Averaged Price: $24.46”

291 Changes are to the text of the UCLL STD Schedule 2 – UCLL Price List

	and replace with following text: “Geographically De-Averaged Price – Urban Exchange: $19.08” “Geographically De-Averaged Price – Non-Urban Exchange $35.20” “Geographically Averaged Price: $23.52”.

Sub-loop Services STD – Sub-loop UCLL Price List[292]	
Service component 2.1 – Sub-loop MPF Service Monthly Charge	Delete following text from column headed “Charge”: “Geographically De-Averaged Price – Urban Exchange: 11.98 Geographically De-Averaged Price – Non-Urban Exchange: 22.12 Geographically Averaged Price: $14.77” and replace with following text: “Geographically De-Averaged Price – Urban Exchange: $11.52 Geographically De-Averaged Price – Non-Urban Exchange: $21.26 Geographically Averaged Price: $14.21”.

[292] Changes are to the text of Sub-loop Services STD, Service Appendix 1, Schedule 2 – Sub-loop UCLL Price List.