Report for Chorus Limited

Cross-submission on UCLL and UBA Price Determination Issues

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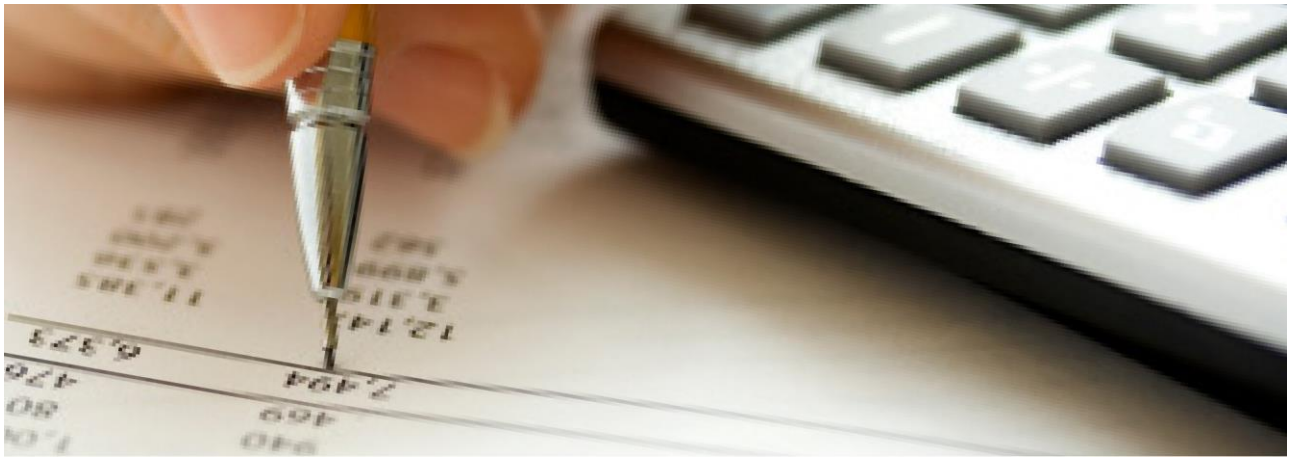

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Executive summary

1. This report contains our views on the following issues raised in August submissions on the Commerce Commission's further Draft Determination for Chorus' UCLL and UBA services (Draft Determination):

    - From what date should prices from the application of the final pricing principle (FPP) apply, and in what manner (referred to in other submissions as "backdating").
    - The scope of costs that should be included in the TSLRIC cost modelling.
    - How best to provide a TSLRIC estimate of transaction charges.
    - Whether the allowed WACC should be set at a margin above the point estimate that results from the estimation process.

From what date and in what manner should the FPP prices apply?

2. In its Draft Determination the Commission majority proposed to not backdate FPP prices, while the minority proposed to backdate these prices to December 2014.

3. Spark, Vodafone and CallPlus (RSPs) and their advisers consider FFP prices should not be backdated. DotEcon (one of Spark's and Vodafone's advisers) sets out what it considers to be four preconditions that must be met to realise efficiency benefits from backdating and finds these preconditions have not been met in this circumstance. The RSPs also consider that any backdating of the FPP price would result in unacceptable price uncertainty for RSPs in the period between when the IPP applied and the FPP prices are determined.

4. Chorus submitted that the FPP prices should apply from the date of the application of the relevant IPP prices.

5. We submitted that the two issues of (1) the commencement of the regulatory periods and (2) the price profiles within the regulatory periods should be considered separately and not be conflated, thereby providing the Commission a wider set of options to address timing issues. We recommended the regulatory periods should commence from the time at which the relevant IPP prices applied, and we proposed three factors that should be considered when determining price profiles within each regulatory period.

6. When these issues of timing are framed as whether or not to backdate FPP prices, it appears the RSP and Chorus views are two polar points on a single continuum. However, their respective views are about subtly different points.

7. The RSPs' primary concern appears to be that at any point in time an RSP wishes to be certain as to the final prices for the UCLL and UBA services and their associated transaction charges. They consider this certainty is needed in order for

them to compete effectively and to have appropriate incentives to invest in an efficient manner.

8. Chorus' primary concern appears to be that it considers it should be able to obtain a (time adjusted) TSLRIC-based return on its UCLL and UBA services and associated transaction charges, and that this return should be achievable from when contested IPP prices applied to these services. Chorus considers these returns are needed in order for the legislative requirements of the Act to be implemented, and for it to have appropriate incentives to invest in an efficient manner.

9. We consider the two-step framework as set out in our earlier report is capable of addressing these apparent competing views, and in a manner that is consistent with the efficiency considerations of section 18.

10. We consider the FPP method is best viewed in economic terms as providing assurance to affected parties that prices will reflect the TSLRIC pricing method if requested, within a wider regulatory design that attempts to lower the cost of regulation by way of an initial benchmarking approach under the IPP.

11. This assurance function provided by the FPP is critical from the perspective of an investor in the regulated service, and for RSPs, as it sets out the pricing method they are able to rely on if they are not satisfied with the outcome of the IPP method. For this assurance function to be credible and effective from the perspective of affected parties they need to have confidence that the FPP prices will in practice be used in the supply of the regulated services, if requested. To be complete, this assurance function therefore requires that the FPP regulatory periods commence from the same date as the IPP prices applied.

12. Within the regulatory periods, the Commission needs to determine a price profile (i.e. the level of prices over time) that best gives effect to section 18 considerations. We proposed three factors to take account of in this process.

13. DotEcon proposed four preconditions that they consider need to hold for backdating to be efficiency enhancing. These preconditions ignore what has occurred in the relevant markets since the contested IPP prices applied and do not address the full benefits of the assurance function of the FPP that we have identified. Thus, we do not consider DotEcon's proposed preconditions to be a reliable test to determine, from an efficiency perspective, whether to commence the regulatory periods prior to December 2015 or to apply FPP prices (that differ to IPP prices) prior to that date. It follows that we do not consider that they should be employed as pre-conditions for these determinations.

14. We continue to recommend the Commission employs the framework that we set out in our earlier report to address the so-called "backdating" issue. That framework includes the following two steps:

    - First, determine from what date the FPP regulatory periods should commence. We consider the regulatory periods should commence from when the relevant contested IPP prices applied.
    - Second, determine price profiles (i.e. the level of prices for each service over time) within each regulatory period. When setting the price profiles the

Commission should consider the three factors we raised in our earlier report, including consideration of the extent to which RSPs anticipated any change to IPP prices. We consider this a more appropriate approach than testing for whether RSPs knew with certainty the details relating to backdating.

15. By separating the timing of the FPP regulatory periods from the timing of particular FPP price levels the Commission would appropriately avoid conflating these two issues into the single question of whether or not to "backdate" FPP prices.

Costs to be included in the TSLRIC cost modelling

16. The Commission's position in the Draft Determination is that the TSLRIC modelling should proceed on the basis of estimating forward-looking, long-run, efficiently incurred, incremental costs by assuming an efficient operator would build (and operate) from scratch a network using modern assets to provide the relevant services. This approach is consistent with classical or conventional TSLRIC, and is strongly supported by well-respected authorities with deep experience in telecommunications regulation.

17. Despite this, some submissions (most notably Spark's) argued that the Commission's preferred 'conventional' approach results in modelling choices that are flawed. These submissions attempt to draw on "real life" considerations, regulatory practices elsewhere and the statutory purpose of section 18 in support of their arguments. The specific modelling choice raised by submitters relates to the valuation method for passive infrastructure. Spark argues that Chorus assets that are capable of re-use should be excluded from the cost modelling, as including assets in the modelling at their replacement cost would result in efficiency losses to the detriment of end-users.

18. We find no support in economics for the claims being made by Spark. In our view, Spark's approach:

- Misunderstands TSLRIC by ignoring established authority on what TSLRIC entails and cites irrelevant observations from regulatory practice overseas (i.e. from jurisdictions that have moved away explicitly from TSLRIC or where pricing approaches are not defined by TSLRIC), or alternatively argues for an approach other than TSLRIC.

- Would impede investment and hence efficiency. The Commission is being asked by Spark to place no value on sunk and reusable assets, with the consequence of a TSLRIC price that tends toward zero the greater the extent to which relevant assets are already in place. When faced with the prospect of being unable to recover sunk investments a rational investor would anticipate the kind of regulatory opportunism that the Spark approach entails and reduce or curtail investment accordingly. Such an outcome would run counter to the statutory purpose (particularly section 18 (2A)) and ultimately would not be in the long-term interests of end-users.

19. We recommend the Commission maintains its use of the conventional TSLRIC approach, inclusive of incorporating all relevant assets in the TSLRIC modelling at their replacement costs, as we consider this is consistent with the TSLRIC requirements of the Act, including section 18.

TSLRIC estimate of transaction charges

20. The Commission in its Draft Determination uses the Chorus' competitively determined costs as the starting point for estimating the cost of the services covered by transaction charges, and then makes a number of adjustments derived from local and international benchmarks.

21. Spark and Vodafone, and their adviser WIK-Consult have proposed a number of further efficiency adjustments, based mainly on international benchmark data.

22. We agree with the Commission's choice of starting point, as it provides the Commission with a set of observable costs that have been derived from competitive market processes to deliver the relevant services. These costs reflect the service providers' views on their ability to deliver these services in the New Zealand context, including the scale, connection density and topography characteristics of the New Zealand telecommunications market, and the labour market characteristics pertaining in New Zealand. A hypothetical efficient operator (HEO) would need to operate within these same market contexts and therefore, in our view, the Commission is correct in starting with prices that reflect these characteristics.

23. The primary difficulty in using international benchmarking data to test or modify the Commission's starting point is to identify in the data variations due to differences in New Zealand's characteristics that an HEO could not be expected to change (e.g. scale, connection density, topography and labour market characteristics) versus those it may be able to change (e.g. efficiency of processes, accessibility of information to the supplier, choosing a different contract design, or opting to outsource at a different point in the delivery of the service). The Commission encountered similar difficulties when comparing the TSLRIC modelled results for the UCLL and UBA services with international data on prices for similar services.

24. We consider the starting point chosen by the Commission for transaction charges to be analogous to the modelling the Commission has undertaken for the UCLL and UBA services, and therefore should prevail over benchmarking results, unless there is evidence that the Chorus approach to outsourcing is inefficient (and the Commission has not identified any such inefficiencies in the Draft Determination). In the absence of any identified inefficiencies in Chorus' outsourcing arrangements, the competitive tendering approach can be expected to reflect the efficient forward looking costs required to provide the requisite services in the New Zealand market context. This is the outcome required by TSLRIC.

WACC margin

25. The Commission in the Draft Determination sets the allowed WACC at the point estimate which results from the estimation process. Various submissions opposed the possibility of the Commission setting the allowed WACC at a margin above that point estimate in its final determination. The major argument advanced by these submissions was that there would be direct costs to end-users while the models that have been examined do not provide reliable evidence of any long-term benefits that would outweigh these direct costs.

26. The pivotal analytical issues, in our view, are:

- Whether section 18 sets the Commission an economic efficiency objective; and
- Recognition of the possibility of error in estimating WACC.

27. In addition, we assess the submissions' claims in respect of Oxera's modelling, the standards to which the modelling should be held, and the issue of regulatory consistency.

28. We have previously explained why a total welfare, or economic efficiency interpretation, of section 18 (which sets the compass for the Commission's decisions) is internally consistent with Part 2. In contrast, submissions opposing a WACC margin would, in our view, ask the Commission to adopt an approach which makes everyone in society worse off (a net efficiency loss), as long as it achieves net transfers from one commercial entity, Chorus, to other commercial entities.

29. There is nothing in section 18 that provides the Commission with guidance as to how it should discriminate between interest groups in this way. Submissions either provide no economic analysis of section 18 or Part 2 (Network Strategies) or are inconsistent in their interpretation of efficiency (Spark). In the latter case, no analysis is provided to support the apparent view that section 18 demands an efficiency standard in some applications (TSLRIC) and a consumer benefit standard in others (estimating WACC).

30. In our view, section 18 does not provide an economic basis for making the allocative choices required under the consumer welfare standard assumed by Network Strategies and Spark, amongst others.

31. The Commission has recognised the potential for error when estimating WACC, and in particular underestimation, in previous decisions in respect of gas and electricity networks. That the Commission (and submitters) now effectively ignore the possibility for error is puzzling.

32. Other submissions have also not recognised that modelling exercises of the type Oxera undertook can, at best, only provide an "orders of magnitude" or indicative estimate of the quantitative effects to support or illustrate a position arrived at by theory. Instead, they appear to us to argue that a (largely unavoidable) weakness in the representation of the real world in the Oxera model undermines the theory. In our view, it does not. The theory underlying the need for a margin is, in our view, unambiguous and remains intact regardless of the modelling process.

33. Regulatory consistency, particularly in the context of the need for investment incentives for disruptive technologies, would seem to us to provide further grounds for the Commission to re-consider its position. Further support for the possibility of a margin is provided by the inclusion of some previous model omissions, which we conclude justify a margin.

34. In light of the other submitters' lack of sufficient economic analysis, inconsistencies in interpretation of efficiency, and the lack of allowance for parameter error, we recommend the Commission reconsider its position in the Draft Determination not to provide for a margin above the point estimate that results from the estimation process. Such an approach would also promote regulatory consistency.

Introduction

35. Chorus has asked us to consider the following issues raised by submitters[1] in their submissions on the Commerce Commission's further Draft Determination[2]:

- From what date should prices from the application of the final pricing principle (FPP) apply, and in what way (referred to in other submissions as "backdating").
- The scope of costs that should be included in the TSLRIC cost modelling.
- How best to provide a TSLRIC estimate of transaction charges.
- Whether the allowed WACC should be set at a margin above the point estimate that results from the estimation process.

36. The structure of our report follows the above order of issues.

Code of conduct

37. The authors of this report have read the Code of Conduct for expert witnesses and have complied with its requirements when completing this report.

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1 Spark "Further Draft Pricing Review Determination for Chorus' UBA and UCLL services" pp.64-72 (backdating),paragraphs 49-95 (on definition of TSLRIC and costs to be included) and paragraphs 244-247, 288-290, and 317-323 (uplift) [Spark];

Vodafone "On Further Draft Pricing Review Determination for Chorus' Unbundled Copper Local Loop Service and Further Draft Pricing Review Determination for Chorus' Unbundled Bitstream Access Service" pp.15-25 (backdating) and p.61 (uplift) [Vodafone];

DotEcon "Backdating of FPP prices in New Zealand" prepared for Vodafone and Spark [DotEcon];

WIK-Consult "In response to the Commerce Commission's "Further draft pricing review determination for Chorus' unbundled bitstream service" and "Further draft pricing review determination for Chorus' unbundled copper local loop service" including the revised cost model and its reference documents" pp.13-21 (backdating) and pp.55-57 (uplift) [WIK-Consult]; and

Network Strategies "Revised draft determination for the UCLL and UBA price review - UCLL and UBA Final Pricing Principle" Report number 35013 pp.109-113 (backdating) and pp.87-93 (uplift) [Network Strategies].

2 Commerce Commission (2015a) "Further draft pricing review determination for Chorus' unbundled copper local loop service: under section 47 of the Telecommunications Act 2001, Further Draft Determination." [Draft Determination]

Commerce Commission (2015b), 'Further draft pricing review determination for Chorus' unbundled bitstream access service: under section 47 of the Telecommunications Act 2001, Further Draft Determination."

From what date and in what manner should the FPP prices apply?

Submissions

38. Spark, Vodafone and CallPlus (RSPs) and their advisers frame this timing issue as one of whether or not to backdate the FPP prices to December 2014. They consider FFP prices should apply from the time of their determination (expected to be December 2015) and should not be backdated. The main economic reason given by Spark and Vodafone for not backdating is their view that the four "pre-conditions" set out by DotEcon[3] to realise efficiency benefits from backdating have not, in this circumstance, been met.

39. The RSPs also state that any backdating of the FPP price would result in unacceptable price uncertainty for RSPs in the period between when the IPP applied and the FPP prices are determined.

40. Chorus submitted that the FPP prices should apply from the date of the application of the relevant IPP prices.[4]

41. We submitted that the two questions of (1) the commencement of the regulatory periods and (2) the price profiles within the regulatory periods should be considered separately and not be conflated. We stated that the regulatory periods should commence from the time at which the relevant IPP prices applied, and we raised three factors that should be considered when determining price profiles within each regulatory period.[5]

Analysis

Apparent competing views are about different issues

42. When the issues of timing are framed as whether or not to backdate FPP prices, it appears the RSP and Chorus views are two polar points on a single continuum. However, their respective views are about subtly different points.

43. The RSPs' primary concern appears to be that at any point in time an RSP wishes to be certain as to the final prices for the UCLL and UBA services and their

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3 DotEcon, page 6.

4 Chorus "Submission for Chorus in response to Draft Pricing Review Determinations for Chorus' Unbundled Copper Local Loop and Unbundled Bitstream Access Services (2 July 2015)", 13 August 2015, section 4 [Chorus 13 August].

5 Stuart Shepherd, Kieran Murray, Tony van Zijl, *Economic comment on UCLL and UBA pricing Issues*, 11 August 2015, paragraphs 16-28; and section 4. [Sapere 11 August].

associated transaction charges. They consider this certainty is needed in order for them to compete effectively and to have appropriate incentives to invest in an efficient manner.

44. Chorus' primary concern appears to be that it considers it should be able to obtain a (time adjusted) TSLRIC-based return on its UCLL and UBA services and associated transaction charges, and that this return should be achievable from when contested IPP prices[6] applied to these services. Chorus considers these returns are needed in order for the legislative requirements of the Act to be implemented, and for it to have appropriate incentives to invest in an efficient manner.

45. We consider the two-step framework as set out in our earlier report appropriately addresses these apparent competing views, and in a manner that is consistent with the efficiency considerations of section 18.

A two-step framework to address apparent competing views

46. In our earlier report we set out a framework which addressed the so-called backdating issue, using the following two steps:

- First, determine from what date the FPP regulatory periods should commence.
- Second, determine price profiles (i.e. the level of prices for each service over time) within each regulatory period.

Reason for commencing regulatory periods from when contested IPP prices applied

47. In our earlier report, we described the assurance function that we consider the FPP is designed to play and the implications of that for the timing of the FPP regulatory periods (paragraphs 103 – 105):

> *The assurance function provided by the FPP is critical from the perspective of an investor in the regulated service, and for RSPs, as it sets out the pricing method they are able to rely on if they are not satisfied with the outcome of the IPP method. For this assurance function to be credible and effective from the perspective of affected parties they need to have confidence that the FPP prices will in practice be used in the supply of the regulated services, if requested. To be complete this assurance function therefore requires that the FPP determination, and the resulting prices, apply from the same date as the IPP determinations apply. We note this timing requirement is not addressed, from an assurance perspective, by the regulator assuming that the supplier of the regulated service will view as symmetric the probability of an IPP being above or below the FPP. The supplier (or potential investor) may have a very different view of these*

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6 "Contested IPP prices" refers to the IPP prices for UCLL and UBA services and their related transaction charges that parties have requested the Commission to review pursuant to the final pricing principles (FPP).

probabilities, and it is the views of the investor that drives investment incentives, not the assumptions of the regulator.

If the FPP determination does not apply from the same point in time as the relevant IPP determination, the intended assurance function of the FPP is eroded, that is affected parties would not be confident that the relevant services will be priced by the TSLRIC method required under the FPP (if requested). We note the delay in timing of this FPP determination relative to the point in time from which the UCLL IPP price applied will be three years (if the Commission's timetable in the Draft Determination is adhered to), which is not a trivial period. This lag (and potential lags in future determinations) in the application of the FPP relative to the IPP determination will erode investment incentives, as it will leave investors unsure as to the extent to which they are in practice able to rely on the FPP if the IPP is found to be inadequate. Such erosion of investment incentives will have efficiency implications that are contrary to the long-term benefit of end-users.

48. We also explained in our earlier report the importance from a section 18 perspective for the Commission to undertake this determination in a manner that is time consistent, that is in a manner not influenced by the stage in the investment cycle that Chorus, or the RSPs, find themselves.

49. Taken together, we consider the assurance function of the FPP, and time consistency in regulatory decision-making, require that the regulatory periods commence from the date at which the relevant contested IPP prices applied.

50. DotEcon proposed four preconditions that they consider need to hold for backdating to be efficiency enhancing. The DotEcon preconditions have been proposed within an assumed context that FPP prices will be either backdated, or not. In our view, this is an artificially truncated view of the set of options available to the Commission, as we described in our earlier report (the timing of the regulatory periods, and price profiles within those periods, can be considered separately and need not be conflated).

51. On the DotEcon points themselves, they proposed the four preconditions as a bimodal test; if all preconditions are met than efficiency benefits may be achieved by backdating, and if not no efficiency benefits would be achieved. DotEcon does not explain the basis for this bimodal test across all four preconditions, but rather asserts this to be case (page 6). We are unconvinced this is the case; in our view it is the extent to which each point is met that would determine whether the sort of efficiency benefits DotEcon focus on may be achieved, as opposed to them being preconditions that must all be met completely.

52. The DotEcon preconditions require the Commission to ignore what has occurred in the relevant markets since the contested IPP prices applied. As we discuss below, a number of RSPs appear to have anticipated that the draft FPP prices would be backdated, and we consider this information should be considered by the Commission when it is determining price profiles within regulatory periods. The DotEcon preconditions would rule out this consideration.

53. In addition, the DotEcon analysis does not address the full benefits of the assurance function of the FPP that we have identified, and in particular the importance of suppliers and purchasers being assured that regulated services will be priced on a TSLRIC basis from when the contested IPP prices applied. We consider this aspect can and should be addressed by commencing the regulatory periods from the date at which the contested IPP prices applied.

54. Thus, we do not consider DotEcon's proposed preconditions to be a reliable test to determine, from an efficiency perspective, whether to commence the regulatory periods prior to December 2015 or to apply FPP prices (that differ to IPP prices) prior to that date. It follows that we do not consider they should be employed as preconditions for this determination.

55. Lastly, we have considered whether the international regulatory examples cited in DotEcon's report suggest that the regulatory periods should commence from some other date. We understand from analysis provided to us by Chorus[7] that none of the listed regulatory regimes employ a two-step pricing process along the lines of the IPP/FPP approach. Thus, the issue of when the FPP price determination should apply relative to IPP prices does not appear to arise in these other regimes. It seems to us the primary insight from that analysis is the uniqueness of the design of the IPP/FPP two-step approach relative to these other regulatory regimes.

Considerations for determining price profiles for the period prior to Dec 2015

56. In our earlier report (paragraph 120), we set out three factors that the Commission should consider when determining price profiles within a regulatory period prior to December 2015 (assuming the determination is made by then), which in summary were:

- *The extent to which the difference between the IPP and FPP has been anticipated by the RSPs.*
- *The extent to which deferring the price profile increases volume forecast risk carried by the supplier, thereby eroding the assurance function of the FPP.*
- *The extent to which the price profile will hinder or foster competition for the long-term benefit to end-users.*

57. In contrast, DotEcon focused on testing whether the parties:

- Had certainty with respect to whether the backdating would occur, the date from which it would apply, and the price that would be backdated (this covers their first three points).
- Were able to act in the interim period as if the backdated prices applied.

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7 Chorus cross-submission at Part 3.

58. The apparent reason for these factors is that they are perceived to be required in order for RSPs to be in a position to act with certainty, which is considered important to efficient decision making on the part of RSPs.

59. We contend the Commission should consider the extent to which in practice the RSPs have anticipated a change in the IPP prices prior to December 2015, as it is these prices that will have influenced the efficiency of the market in that period and RSPs' decision making. This consideration is reflected in our first factor, to consider "*The extent to which the difference between the IPP and FPP has been anticipated by the RSPs.*"

60. We make the following observations in relation to recent RSP practice:

- Spark, Vodafone and CallPlus informed the Commission at the conference on this determination of 15 – 17 April that they had taken account of the draft FPP prices in their pricing subsequent to the issuing of the initial draft determinations in December 2014;[8] and
- We are not aware of anything that would have prevented RSPs from behaving as if the initial draft FPP prices were in place.

61. It is also instructive to identify the nature of the wealth transfer that would occur if prices lower than the initial draft FPP prices were used for the UCLL and UBA services from when they were reflected in RSP prices (and assuming the regulatory periods commence from when the contested IPP prices applied). To the extent that RSPs had priced into their retail prices the higher initial draft FPP prices, a price lower than that draft FPP price would result in a wealth transfer from end-users to RSPs. This wealth transfer would arise due to end-users paying the higher draft FPP prices (reflected in the retail price), but then these higher draft FPP prices would not be reflected in the TSLRIC modelling when calculating the price levels for the years from December 2015 onward. There are no obvious economic efficiency gains from such a wealth transfer from end-users to RSPs.

Recommended approach

62. We consider it is appropriate for the Commission to use the framework that we set out in our earlier report to address the so-called "backdating" issue. That framework includes the following two steps:

- First, determine from what date the FPP regulatory periods should commence. We consider the regulatory periods should commence from when the relevant contested IPP prices applied. This timing is to assure the supplier and purchasers of the regulated services that when an IPP price is contested, prices for those services will be set on a TSLRIC basis, and will apply from when the contested IPP prices applied.

[8] See Chorus 13 August, paragraphs 314 – 317 for reference material.

- Second, determine price profiles (i.e. the level of prices for each service over time) within each regulatory period. When setting the price profiles the Commission should consider the three factors we raised in our earlier report, including consideration of the extent to which RSPs anticipated any change to IPP prices.

Costs to be included in TSLRIC model

Submissions

63. Spark questions the Commission's interpretation of TSLRIC and the consequent effects of that interpretation on the valuation method for relevant assets.[9] In particular, Spark asserts that the Commission "*has been overly focussed on academic meaning*…" and has "*failed to ask the correct efficiency questions*…"[10] Spark provides alternative definitions for two major concepts: forward-looking costs (paragraphs 37-48), and the long-run (paragraphs 49-63).

64. Furthermore, Spark claims that the following combined actions of the Commission are inconsistent with the Act and render the Commission's modelling choices (and subsequent prices based on those choices) erroneous, and wrong in law:

- Failure to identify the over-arching legislative direction to advance efficiencies to the benefit of end-users (paragraph 64).
- Inability to link the TSLRIC costing methodology with the statutory purpose, set out in section 18 (paragraphs 65-69).
- The use of a "*conventional economic approach*" (paragraphs 70-72).

65. Spark argues that *"…the elevation of a "conventional" approach to TSLRIC to a key design principle, has resulted in a series of individual modelling choices that do not meet the key legislative requirements."*[11] The key (and only) modelling choice they then discuss is the valuation methodology used by the Commission for Chorus assets (i.e. Optimised Replacement Cost, or ORC). The core of Spark's arguments can be summarised by the following two (related) claims:

- That Chorus' current situation in relation to passive infrastructure should be used to modify the Commission's approach to TSLRIC; and
- That "real world" considerations are paramount and use of a "conventional" approach that abstracts away from such reality results in efficiency losses to the detriment of end-users.

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9 While other submitters referred to these issues tangentially (e.g. paragraphs 172-179 of the WIK-Consult submission, paragraphs 10.6-10.8 and 11.1-11.3 of the Wigley and Company submission, and paragraph E1.1 of the Vodafone submission), Spark was the only submitter that directly linked the interpretation of TSLRIC to specific modelling choices and the statutory objective. Hence, we focus on Spark's submission.

10 Spark, paragraph 35.

11 Ibid, paragraph 73.

66. Chorus submitted in support of the Commission continuing to include all assets that are required to deliver the UCLL and UBA services in its TSLRIC modelling.[12]

67. We submitted that there was no case to modify the 'classical' (i.e. conventional) TSLRIC approach and that a 'classical' approach was consistent with the statutory objective set out in section 18.[13]

Analysis

68. We start by assessing the likely effects from Spark's suggested approach on investment, efficiency and ultimately the long-term benefit of end-users. We then proceed to argue that it is questionable whether Spark's interpretation of 'conventional' is even within the bounds of TSLRIC (i.e. the approach Spark are suggesting departs from TSLRIC in material ways), highlighting authoritative interpretations that Spark has chosen to ignore. We believe that Spark has misunderstood key TSLRIC concepts and meanings.

Spark's suggested approach would impede investment and harm efficiency

69. The appeal of TSLRIC is its ability to deliver an efficient price regardless of the stage in the investment cycle the supplier of the service is in. A well-known regulatory economist with significant experience in telecommunications explains the situation as follows:[14]

> *As a matter of theory, forward looking cost models are intended to act "as if" sunk costs did not exist. As a result, it seems inconsistent with the purpose to assume that some sunk costs (say, those associated with trenching) should be treated as sunk, while others (say, those associated with cabling) are not. Moreover, the line drawn between these would seem to be arbitrary, and would hence reduce the significance of the results. Consequently, it seems best to consistently adopt a greenfield approach.*

70. In addition to this theoretical view, there are also practical considerations that act against the Spark position. The Spark view, if accepted would see the regulatory authority place no value on sunk and reusable assets.[15] Indeed, according to Spark "…*costs that will not be incurred in the future must not be considered*…"[16] This approach ignores the consequences on investment.

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12 Chorus 13 August, paragraphs 178, 179.

13 Sapere 11 August, paragraph 70.

14 Ergas H (1998) "TSLRIC, TELRIC and Other Forms of Forward-Looking Cost Models in Telecommunications: A Curmudgeon's Guide." Centre for Research in Network Economics and Communications, University of Auckland, page 13.

15 Spark, paragraph 53.

16 Ibid, paragraph 57a.

71. If Spark's proposal were adopted, a supplier that has the majority of relevant assets already in place would face a TSLRIC price that tends to zero. When faced with the prospect of being unable to recover sunk investment, investors would be very reluctant to commit. That is, a rational investor would anticipate the kind of regulatory opportunism that the Spark approach entails and reduce or curtail investment accordingly. This inefficiency runs counter to the statutory purpose in section 18 (particularly section 18 (2A)), and concomitantly the long-term interests of end-users.

72. In our earlier report we highlighted the importance of time consistency to regulatory decision-making.[17] By seeking the removal of costs associated with passive infrastructure, Spark is inviting time inconsistent behaviour from the Commission. As we concluded (at paragraph 96) in our earlier report:

> *For as long as the Commission is involved in regulatory price setting in the telecommunications sector, time consistency in its regulatory decision-making will continue to be to the long-term benefit of end-users.*

73. We also note the Commission's position (i.e. using ORC to value relevant assets) is supported by Professor Vogelsang who states "*I agree that taking account of re-use would be wrong in the New Zealand context,…*"[18] The reasons for his view are efficiency related, that there have been no windfall gains from past TSLRIC applications, and that taking account of asset re-use would harm the predictability of the TSLRIC concept.[19]

Conventional TSLRIC

74. Spark defines a "conventional" approach as *"…one that is generally or commonly accepted, or accepted by most people."*[20] Spark then goes on to state that this definition must give rise to a temporal element and that they infer that the Commission's use of the term "conventional" must mean modern conventionality or what is "conventional today." The inference is that conventionality changes over time.

75. In our opinion, conventional (as it relates to methods/approaches) refers to doing things the traditional way, or the way things have been done for some time. More importantly the Spark interpretation, in our view, looks to direct the Commission towards an approach that does not fall under the auspices of TSLRIC.

76. Spark agrees (paragraph 83) that the Commission is correct in describing the typical implementation of LRIC-based costing models in the late 1990s and early 2000s as synonymous with conventional TSLRIC approaches. However, they also claim that they do not agree that it is an accurate description of the "conventional" approach

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17 Sapere 11 August, paragraphs 77-96.

18 Vogelsang I (2015), "Reply to Comments on my November 25, 2014, paper "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" paragraph 99.

19 Ibid, footnote 17.

20 Spark, paragraph 82.

to TSLRIC today. As indicated above, this appears a misunderstanding by Spark of what "conventional" means.

77. Despite this potential misunderstanding by Spark, they proceed to appeal to "*popularity in use*" notions with respect to practices in other regulatory jurisdictions. The intention of this reference is to demonstrate "*modern TSLRIC thinking*" (and by their measure "*conventional*" approaches). We consider Spark's view is erroneous for two reasons.

78. The first is that decisions to move away from particular approaches (e.g. full replacement cost LRIC) is experiential, and based on observations of how "*conventional*" TSLRIC has worked in practice, over time. Simply claiming that either the experiences of overseas authorities is highly instructive or that there is somehow a new conventional approach that is not well understood in New Zealand is not sufficient to depart from established orthodoxy.

79. The second is that Spark's use of Australia as an example of modern TSLRIC thinking is misleading. Most recently, Australia has looked to move away explicitly from the TSLRIC approach, in favour of building block models for declared fixed line services.[21] Regardless of differences in interpretation, it is simply not plausible to cite moves away from TSLRIC pricing altogether as an example of a shift in the definition of the "*conventional*" TSLRIC approach.

80. In relation to the EC approach also cited by Spark as a modern TSLRIC example, the Commission has, in our view, succinctly distinguished the specifics of the regulatory environment in Europe to that in New Zealand. The Commission distinguishes it in terms of legislative prescription (paragraph 195), the need to send appropriate pricing signals for efficient market entry (paragraph 196) and the risk of over-recovery of costs (paragraph 199).

81. We agree with the Commission that there are sufficient differences between New Zealand and the EC to discount the case to follow the EC and move away from the conventional approach to implementing TSLRIC (paragraph 206). We also note the view of Professor Ingo Vogelsang that it is open to debate whether the EC's approach is actually within the limits of the TSLRIC concept at all.[22]

82. We consider Spark is confusing TSLRIC with other costing concepts. By claiming that sunk assets should be excluded from the TSLRIC model, the Spark analysis confuses short-run incremental cost analysis with TSLRIC and could be viewed as a quasi-cashflow analysis of the additional costs Chorus faces to provide the service. However, TSLRIC is not based on a short-run incremental cost or cashflow analysis and there is no basis to modify TSLRIC modelling to allow for such an approach.

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21 ACCC (2011) "Inquiry to make final access determinations for the declared fixed line services." Available at: http://www.accc.gov.au/system/files/FADs%20for%20Fixed%20Line%20Services%20-%20Final%20Report%20-%20public%20version.pdf

22 Vogelsang I (2015) Op.cit, paragraph 98.

83. Spark believes that the Commission's conclusion that ORC is the most appropriate valuation methodology for this class of assets is a *"…result of a misplaced and erroneous elevation of its conceptual economic framework for TSLRIC, and its hypothetical HEO and MEA, above the s18 efficiency objective."*[23] Notwithstanding that Spark's view is inherently backward-looking, we believe that the Commission's position is well founded.

84. The Commission's proposition that conventional TSLRIC is implemented based on the assumption of a hypothetical network being built from scratch using modern efficient technology is supported by well-respected and published authors:[24]

> *181.1 Noam states that "TSLRIC is defined as the total forward-looking cost of a hypothetical, efficient system built from scratch, using the most efficient modern technology";*
>
> *181.2 Kahn, in discussing TELRIC, describes it as "the costs of a hypothetical, most efficient new entrant, constructing an entire set of facilities as though writing on a blank slate";*
>
> *181.3 Ergas refers to "the "thought experiment" underlying TSLRIC as "the hypothetical builder of a new, wholesale only, network";*
>
> *181.4 Bauer refers to TELRIC as "a forward-looking methodology to generate a benchmark based on the assumption that an efficient, modern network (rather than the legacy network) is in place.*

85. We also note that Professor Vogelsang states that:

> *[t]he conventional approach to TSLRIC measurement has been to interpret "long-term" to mean that all costs are variable so that the costs measured are those of a hypothetical firm that starts from scratch.*[25]

86. In our assessment, Spark has failed to understand that TSLRIC is essentially a *"…thought experiment …of determining charges 'as if' the network was being built through a Chadwick-Demsetz auction under competitive conditions."*[26] The observation that Chorus is able to use assets in which it has already invested in order to supply the service in the future is not a reason to remove those assets from the TSLRIC model. Such assets may inform what in practice are the appropriate assets to use (i.e. the Modern Equivalent Asset), but once that is identified, the TSLRIC demands that all assets are included at optimised replacement cost.

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23 Ibid, paragraph 77.

24 Draft Determination, paragraph 181.

25 Vogelsang I (2014) "Current academic thinking about how best to implement TSLRIC in pricing telecommunications network services and the implications for pricing UCLL in New Zealand" paragraph 86.

26 Ergas H (2009) "Time Consistency and Regulatory Price Setting: An Australian Case Study." Review of Network Economics 8 (2), pp.153-160, p.154.

87. In respect of the consistency or otherwise of "*conventional*" TSLRIC with section 18 objectives, we restate our position from our earlier report that the Schedule 1 description of TSLRIC supports the use of classical (i.e. unmodified) TSLRIC and that this classical approach is consistent with section 18.[27] Further we noted that section 18 (2) and (2A) provide for the potential shortcomings of TSLRIC in respect of investment incentives and dynamic efficiency and these sub-sections should guide the Commission in terms of TSLRIC implementation, particularly in the face of uncertainty.[28]

88. In summary, we find no support in economics for the assertions made by Spark to remove passive infrastructure asset values from the TSLRIC modelling. The efficiency properties of conventional (or classical) TSLRIC are well known and accepted. Moreover, we consider conventional TSLRIC is consistent with section 18. As a result, we see no economic justification for excluding passive infrastructure from the TSLRIC model used by the Commission.

Recommended approach

89. We recommend that the Commission maintains its use of a "conventional" TSLRIC approach, which includes that all relevant assets required to deliver the service in question are valued according to their optimised replacement cost.

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27 Sapere 11 August, paragraphs 69-72.

28 Ibid, paragraph 74.

TSLRIC estimates for transaction charges

Submissions

90. WIK-Consult on behalf of Spark and Vodafone proposes a range of so-called "efficiency adjustments" to the Commission's proposed cost estimates for transaction charges by utilising international benchmarking techniques and other adjustments.[29] These proposals are reflected in the submissions of Spark and Vodafone.[30]

91. Chorus supports the Commission's "top-down" approach to estimating these costs, which uses Chorus' competitively determined costs as the starting point. Chorus also challenges most of the adjustments that the Commission suggests should be made to the starting point.

Analysis

92. The Commission's starting point to estimating the TSLRIC costs for the services covered by transaction charges is to accept that an HEO would outsource these services. This acceptance is supported by the fact that Chorus outsources these services, that its suppliers undertake similar work for other network operators, and that these outsourcing arrangements can be expected to enable the suppliers to achieve efficiencies from economies of scope, scale and specialisation.[31]

93. The Commission has modelled the costs for these services on a copper (rather than fibre) network basis, as not all tasks performed on a copper network have an equivalent on a fibre network.[32]

94. We agree with the Commission's choice of starting point, as it provides the Commission with a set of observable costs that have been derived from competitive market processes to deliver the relevant services. These costs reflect the service providers' views on their ability to deliver these services in the New Zealand context, including the scale, connection density and topography characteristics of the New Zealand telecommunications market, and the labour market characteristics pertaining in New Zealand. An HEO would need to operate within these same market contexts and, therefore, in our view the Commission is correct in starting with prices that reflect these characteristics.

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29 WIK-Consult, chapter 3.

30 Spark paras 324 – 371 and Vodafone C4.1 – C4.3.

31 Draft Determination, paragraphs 592 – 593.

32 Ibid, paragraph 591.

95. The primary difficulty in using international benchmarking data to test or modify the Commission's starting point is to identify in the data variations due to differences in New Zealand's characteristics that an HEO could not be expected to change (e.g. scale, connection density, topography and labour market characteristics) versus those it may be able to change (e.g. efficiency of processes, accessibility of information to the supplier, choosing a different contract design, or opting to outsource at a different point in the delivery of the service).

96. In the case of the draft FPP prices for the UCLL service, the Commission compared its modelled results with various international benchmark data, including adjusting those data using econometric techniques, and concluded as follows:[33]

> *1826. As can be seen, under this modified dataset, the further draft prices lie within the range indicated by the dataset.[1016] While we can note that such adjustments to the dataset have limitations and dangers, similarly the unadjusted dataset has limitations and dangers when used as a cross-check to the FPP model. The most direct answer to this is to model the expected costs in New Zealand, which is what we have done under the FPP exercise.[1017]*
>
> *1827. There is limited information we can draw from this as a guide to the FPP modelling.*

97. We consider the starting point chosen by the Commission for transaction charges to be analogous to the modelling the Commission has undertaken for the UCLL and UBA services, and therefore should prevail over benchmarking results, unless there is evidence that the Chorus approach to outsourcing is inefficient (and the Commission has not identified any such inefficiencies in the Draft Determination). In the absence of any identified inefficiencies in Chorus' outsourcing arrangements, the competitive tendering approach can be expected to reflect the efficient forward looking costs required to provide the requisite services in the New Zealand market context. This is the outcome required by TSLRIC.

Recommended approach

98. We support the Commission's approach to use as a starting point for costing the services covered by the transaction charges the cost results from Chorus' competitive outsourcing of these services.

99. We recommend this starting point is modified only where, and to the extent to which the Commission has evidence that Chorus' approach to outsourcing is inefficient.

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[33] Draft Determination, paragraphs 1826 – 1827.

WACC margin

Submissions

100. The Commission's draft decision is to set the allowed WACC at the point estimate which results from the estimation process.

101. Various submissions make broadly similar points to oppose the possibility that the Commission might, in its final decision, set the allowed WACC at a margin above the point estimate which results from the estimation process. These submissions focus on the modelling done by Oxera of the case for adding a margin to the point estimate. For example, the Network Strategies report prepared on behalf of Spark and Vodafone states (page 93) that:

> *The inclusion of a WACC uplift for the estimation of UCLL and UBA prices will inevitably result in direct costs to the end-users while the models that have been examined do not provide reliable evidence of any long-term benefits of a sufficient scale to outweigh these direct costs.*

102. As a further example, Spark comments (paragraph 320):

> *Spark considers that the application of a WACC uplift or an uplift affecting the central estimate of UCLL and/or UBA prices is unsupported by any clear evidence, and accordingly seems likely inevitably to result in direct costs imposed on end-users while the models that have been examined do not provide reliable evidence of any long-term benefits of a sufficient scale to outweigh these direct costs.*

103. Contrary to these views, Chorus submitted that the case had not been made for the Commission to depart from its long-standing practice of recognising the possibility of parameter error by setting the allowed WACC at a margin above the point estimate which results from the estimation process. Submissions from investors, such as Black-Crane Capital and Allan Gray Contrarian Investing, similarly raise concerns that the WACC estimate resulting from the draft decision would undermine investment.

104. We submitted that, on the basis of time consistent behaviour by the Commission and the likelihood of significant net benefits from modifications and improvements to the modelling undertaken, there are reasonable grounds for the Commission to include a margin for parameter error in its estimate of WACC.[34]

[34] Sapere 11 August, section 5.

Analysis

Submissions focus on two pivotal issues

105. Although the submissions in relation to WACC canvas a number of points, they focus attention on two pivotal issues:

- Whether section 18 sets the Commission an economic efficiency objective.
- Recognising the possibility of error in estimating WACC.

106. The conclusions reached by each submitter in relation to the Commission's estimate of WACC reflect, and derive from, the view held by the submitter in relation to each of these two pivotal issues.

Section 18 and estimating WACC

107. We have characterised section 18 as setting the compass for the Commission's decisions under Part 2.[35] It is clear that submitters have taken different bearings from section 18 and hence arrived at very different views as to whether the Commission is on course in estimating WACC.

108. In our 11 August report, we explained why a total welfare, or economic efficiency, interpretation of section 18 provides an internally consistent interpretation of Part 2.[36] The submissions opposing the possibility that the Commission might, in its final determination, set the allowed WACC at a margin above its point estimate apply a different interpretation of section 18.

109. As the citation from Network Strategies illustrates (at our paragraph 101 above), the submitters opposing a WACC margin would have the Commission adopt an approach that provides for a WACC margin only where the efficiency gains from doing so exceed the direct costs to end-users. That is, they would accept an approach which made everyone in society worse off (a net efficiency loss), as long as it achieved net transfers from one commercial entity, Chorus, to other commercial entities.

110. As we observed in our 11 August report, section 18 does not provide the Commission with guidance on how it should discriminate between interest groups in this way (in contrast with section 52A of the Commerce Act).

111. Network Strategies does not provide an economic analysis of section 18 or Part 2 in support of its preferred approach to estimating WACC. Spark initially stresses that section 18 must be interpreted as directing the Commission to "*optimise for overall efficiency*",[37] requires an "*efficiency lens*",[38] identifies "*efficiency as the key determinant*

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35 Sapere 11 August, paragraph 33.

36 Ibid, section 2.

37 Spark, paragraph 90.

38 Ibid, paragraph 77.

in its modelling choices,"[39] and to have regard to the "*key efficiency objective of section 18*"[40]. However, in commenting on the WACC margin, Spark steps away from this efficiency interpretation, and endorses a consumer benefit standard.[41] No analysis is provided in support of its apparent view that section 18 demands an efficiency standard in some applications (TSLRIC) and a consumer benefit standard in others (estimating WACC).

112. We remain of the view that a total welfare, or economic efficiency, interpretation provides an internally consistent interpretation of Part 2. Section 18 does not provide an economic basis for making the allocative choices required under the consumer welfare standard assumed by Network Strategies and Spark, amongst others.

Potential for error is material, and cannot be ignored

113. The starting point for analysis of estimates of WACC is that any estimate of WACC is subject to error. The 'true' WACC is not known and needs to be estimated. Setting the allowed WACC at the point estimate value carries a probability of 50% that the allowed WACC is less than the true WACC. In the case of electricity and gas networks, the Commission has recently set the allowed WACC at the 67th percentile, thus setting the probability of underestimation at 33%.

114. Modelling of the factors relevant to choice of the margin should proceed from the perspective of identifying the best way to address the inherent risk of error that results from estimation. This does not appear to be taken into account in the submissions that oppose the addition of a margin. In fact, the opposing submissions seem to ignore the possibility of error in estimation and focus instead on the mechanics and assumptions of the modelling of the case for a margin.

115. In essence, the opposing submissions have not recognised that modelling exercises of the type Oxera undertook can, at best, only provide an "orders of magnitude" or indicative estimate of the quantitative effects to support or illustrate a position arrived at by theory. Instead, they appear to us to argue that a (largely unavoidable) weakness in the representation of the real world in the Oxera model undermines the theory. In our view, it does not. The theory underlying the need for a margin is, in our view, unambiguous and remains intact regardless of the modelling process.

116. The potential for error, in particular underestimation, is well-known to the Commission. In our 11 August report, we set out some important history[42] that is relevant to this determination (paragraph 135):

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39 Ibid, para 72.

40 Ibid, para 68.

41 Ibid, para 320.

42 Commerce Commission (2010) "Input methodologies (electricity distribution and gas pipeline services): reasons paper." (Reasons Paper) December 2010.

> *Recognition of this potential for error, and that underestimation is the greater concern, led the Commission to set the allowed WACC at a margin above the point estimate. The choice of the 75th percentile level reduced the probability of underestimation from 50% to 25%. That decision was based on careful consideration of the relevant issues but ultimately relied on informal judgment to guide the choice of 75% as opposed to some other percentile (above 50).*

Evidence always elusive in respect of disruptive technologies

117. The modelling undertaken by Oxera estimates the consumer benefits that will accrue from disruptive technologies (as opposed to incremental innovations to existing technology). Network Strategies define the term (on page 90) disruptive to mean "… *a new technology that renders any predecessor obsolete, and involves substantial new investment*."

118. In our view, the test that the opposing submissions subject the Oxera modelling to is overly onerous. In particular, the evidential standard sought is unlikely to ever be reached. By their very nature 'disruptive technologies' are not able to be planned for, as they appear suddenly. Therefore, in our view, expecting there to be strong evidence of a causal nature fails to appreciate the true nature of disruptive technologies.

119. Network Strategies was critical of the limited evidence Oxera relied on to assess the impacts of such technology. However, Oxera's reliance on such evidence is just illustrative of the difficulty in getting relevant evidence. Network Strategies also describe Oxera's estimate of the potential acceleration effect of adding a margin to the point estimate of WACC as "*highly speculative and potentially irrelevant*" as it is not based on New Zealand data.

120. Again, this highlights our major points that robust evidence is not readily available (and may never be) and that speculation is unavoidable with such technologies and innovations. Given that disruptive technologies and the innovations that flow from such technologies are unknown and unexpected (i.e. cannot be planned for), the regulatory authority needs to place considerable weight on ensuring that the cost of capital is as close to a commercial level as possible. This provides the incentive for those with good ideas to commit resources to the development and ultimately delivery of such ideas as innovations for the benefit of end-users.

121. In any case, we do not agree with Network Strategies' characterisation of disruptive technologies. Disruptive technology need not require substantial investment nor render predecessor technologies obsolete. Our view is supported by the online financial dictionary Investopedia:[43]

> *A disruptive technology does not have to be better than those currently offered by the market, and may damage the overall market to some extent by existing. It*

[43] http://www.investopedia.com/terms/d/disruptive-technology.asp

could, for example, be significantly cheaper and still provide the desired features. The advent of e-commerce retailing has led consumers to buy products online rather than their store, with online options often carrying lower prices. This has benefited consumers but made it much more difficult for producers and brick-and-mortar stores to maintain profitability.

Regulatory consistency

122. As mentioned above, the Commission has previously recognised the difficulty in obtaining robust evidence to support the case for setting the allowed WACC for electricity and gas networks at a margin above the point estimate. The Commission nevertheless in the past used informed judgment to set the allowed WACC at the 75th percentile. In the 2014 review, the Commission decided to retain a margin over the point estimate, albeit at the lower level of the 67th percentile. The Commission's decision from the review was guided by a model developed by Oxera but the model was not determinative. The decision therefore still reflected the application of judgment. The opposing submissions (and the Commission in the Draft Determination) now appear to demand a determinative model as the basis for choice of the margin, and in the absence of such a model, that the best estimate of the margin is zero.

123. We consider there are reasonable regulatory consistency grounds for the Commission, in this pricing determination, to continue to recognise that choice of the margin must, at least in part, reflect judgment. We previously summed up our arguments (at paragraph 29) as follows:

Time consistency considerations indicate that there should be a margin. Chorus needs incentives to innovate and invest in respect of the copper network. A broad view of the results of the Oxera model, with improved presentation and modifications, indicate the likelihood of significant net benefits from the signal that a medium range margin would provide in spurring investors to accelerate investment in new technology.

Recommended approach

124. We recommend that the Commission reconsider its position in the Draft Determination not to set the allowed WACC at a margin above the point estimate which results from the estimation process. Adding a margin would also promote regulatory consistency given the previous decisions the Commission has made in setting the allowed WACC for other networks.