



COMMERCE COMMISSION

**Draft determination on the application for determination for  
access to and interconnection with Telecom's fixed PDN service  
'Bitstream Access'**

Determination under section 27 of the Telecommunications Act 2001 ('the Act') in the matter of an application for determination for designated bitstream access service under section 20 of the Act by:

**TELSTRACLEAR LIMITED**

**The Commission:** Douglas Webb  
Paula Rebstock  
Shaan Stevens

**Summary of Application:** TelstraClear Limited applied for a determination, under section 20 of the Act, with respect to bitstream access and backhaul.

**Date of Draft Determination:** 21 April 2005

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## CONTENTS

INTRODUCTION.....	1
Commission process and timetable .....	1
Address for submissions.....	2
THE APPLICATION .....	3
THE FRAMEWORK FOR THE DRAFT DETERMINATION .....	4
SCOPE OF THE BITSTREAM ACCESS SERVICE .....	7
Access Principles & limits on the application of Standard Access Principles.....	7
MARKET DEFINITION AND COMPETITION ASSESSMENT .....	10
Introduction .....	10
<i>Section 64 Local Loop Unbundling Review .....</i>	<i>12</i>
<i>Telecom’s commercial unbundled bitstream service .....</i>	<i>13</i>
Relevant Markets.....	13
<i>Summary of views of the parties.....</i>	<i>13</i>
<i>Commission view.....</i>	<i>14</i>
Conclusion on market definition .....	21
Competition assessment .....	21
<i>National wholesale market for the provision of broadband access .....</i>	<i>22</i>
Markets and competition assessment conclusion.....	30
APPLICATION OF THE INITIAL PRICING PRINCIPLES.....	31
Benchmarking Avoided Costs Saved.....	40
Initial Price payable for Bitstream Access – Residential .....	41
Initial Price payable for Bitstream Access – Business .....	41
SUNDRY CHARGES RELATING TO SUPPLY OF BITSTREAM ACCESS.....	42
<i>Reassignment charges.....</i>	<i>42</i>
<i>New Connections.....</i>	<i>44</i>
<i>Moves, Adds, and Changes (‘MACs’) .....</i>	<i>44</i>
NON-PRICE TERMS - BITSTREAM SERVICE.....	45
Speed configuration.....	45
Request for service equivalence .....	47
<i>Interleaving .....</i>	<i>51</i>
<i>Usage limits on data downloads .....</i>	<i>53</i>
<i>Retail / Wholesale concurrency.....</i>	<i>53</i>

<i>Operational Support</i> .....	54
<i>Static IP Addresses</i> .....	55
<i>Future bitstream availability in new areas</i> .....	56
<i>Service Transferral</i> .....	57
<i>Other non-price terms</i> .....	58
Date of Commencement.....	59
Date of Expiry .....	59
Consolidated list of questions .....	60
Appendix A: Network Performance Measurement Parameters .....	62
Appendix B: International Benchmarking Study of Avoided Costs Saved .....	64

## **List of Tables**

Table 1: CityLink Connect Plans (and comparable Telecom Jetstream plans).....	15
Table 2: Telecom’s Commercial UBS Access Fee .....	19
Table 3: Xtra Residential Jetstream Services .....	34
Table 4: Xtra Business Jetstream services .....	34

## LIST OF TERMS AND ABBREVIATIONS<sup>1</sup>

<b>ACCC</b>	Australian Competition and Consumer Commission
<b>ADSL</b>	Asymmetric Digital Subscriber Line
<b>ATM</b>	Asynchronous Transfer Mode
<b>ESA</b>	Exchange Serving Area
<b>FWA</b>	Fixed Wireless Access
<b>HFC</b>	Hybrid Fibre Coaxial cable
<b>IP</b>	Internet Protocol
<b>ISP</b>	Internet or Independent Service Provider
<b>Kb</b>	Kilobit
<b>Kbps</b>	Kilobit per second
<b>LICA</b>	Local Interconnection Calling Area
<b>Mb</b>	Megabit
<b>Mbps</b>	Megabit per second
<b>NGN</b>	Next Generation Network
<b>NNI</b>	Network Node Interface
<b>OSS</b>	Operational Support System
<b>PDN</b>	Public Data Network
<b>PSTN</b>	Public Switched Telephony Network
<b>SME</b>	Small and Medium sized Enterprises
<b>SSNIP</b>	Small but Significant Non-transitory Increase in Price
<b>TCL</b>	TelstraClear Limited
<b>TCNZ</b>	Telecom Corporation of New Zealand Limited
<b>3G</b>	Third Generation

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<sup>1</sup> Where a term or abbreviation is defined in the Telecommunications Act, the statutory definition is adopted for the purposes of this list.

## EXECUTIVE SUMMARY

- (i) The bitstream access service enables other carriers to utilize Telecom's asymmetric digital subscriber line (ADSL) infrastructure to deliver broadband services to end-users.
- (ii) On 5 November 2004, the Commission received an application from TelstraClear requesting that the Commission determine price and non-price terms for the supply of bitstream access and backhaul services by Telecom. On 18 April 2005, TelstraClear withdrew its request for the bitstream backhaul service.
- (iii) This draft determination sets out the Commission's preliminary views on the application and invites submission from interested parties.
- (iv) The Commission's key conclusions are that:
  - Telecom faces limited competition in a national wholesale market for the provision of broadband services;
  - Telecom will be required to provide a bitstream access service to TelstraClear with a non rate-shaped downstream speed up to the maximum capacity of the DSLAM, and an upstream speed of 128kbps;
  - the initial wholesale price for bitstream access for TelstraClear to supply to residential end-users is \$26.19 excluding GST (being an imputed retail price of \$31.19 less internationally benchmarked avoided costs saved of 16%);
  - the initial wholesale price for bitstream access for TelstraClear to supply to business end-users is \$25.87 excluding GST (being an imputed retail price of \$30.80 less internationally benchmarked avoided costs saved of 16%);
  - Telecom is required to supply TelstraClear with bitstream access with no material difference between the network-based characteristics supplied to TelstraClear and bitstream used by Telecom to supply its own retail services;
  - Telecom is required to provide reporting of key service parameters to ensure consistency of service is achieved; and
  - the inception date of the determination should be the date of determination, with an expiry date twenty-four months after the date of determination.
- (v) The Commission invites written submission from interested parties by 6 May 2005.

## INTRODUCTION

1. The Telecommunications Act 2001 ('the Act')<sup>2</sup> regulates the supply of telecommunications services in New Zealand.
2. The Commerce Commission ('the Commission') has a range of responsibilities under the Act, including making determinations in respect of designated access services. Subject to sections 22 and 23, applicants may make an application to the Commission under section 20 for a determination of all or some of the terms on which a designated access service must be supplied during the period of time specified in the determination.
3. This draft determination relates to an application made by TelstraClear Limited on 5 November 2004 for access to the two designated access services under Schedule 1 of the Act, namely:
  - access to, and interconnection with, Telecom's fixed PDN (the 'bitstream access' service); and
  - Telecom's fixed PDN backhaul (the 'bitstream backhaul' service)<sup>3</sup>.

### Commission process and timetable

4. The Commission invites submission from interested parties on this draft determination not later than 6 May 2005.
5. The views of the Commission in this determination are preliminary only, and the Commission will give consideration to all submissions received and to evidence provided at any conference convened to consider this determination before a final view is reached.
6. To promote an open and transparent process, the Commission intends to publish the submissions received on its website.
7. Commercially sensitive information cited in this draft determination has been provided subject to an order made under section 15(i) of the Telecommunications Act 2001 and section 100 of the Commerce Act 1986 on 9 November 2004. This Order permits the classification of commercially sensitive material as 'Restricted Information'. Information designated in accordance with the provision of this Order is included within square brackets. All such information has been extracted from the public version of the draft determination.
8. Where it is necessary to include confidential information in written submissions, the material should be clearly marked as confidential, and preferably be included in an appendix to the submission or enclosed in square brackets [ ]. In addition to the

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<sup>2</sup> All terms and phrases that are defined within the Act have the same meanings in this Determination. All references to Parts, Schedules and sections are to the Parts, Schedules and sections of the Act.

<sup>3</sup> On 18 April 2005, TelstraClear withdrew its request for the bitstream backhaul service.

confidential copy, submitters should provide the Commission with a public copy of such submissions, which is clearly marked as public, with the confidential material deleted or amended appropriately so it is suitable for release in both electronic and hard copy form.

### **Address for submissions**

9. Submissions on the draft determination should be sent to:

[chris.abbott@comcom.govt.nz](mailto:chris.abbott@comcom.govt.nz)

TelstraClear Bitstream Draft Determination  
Commerce Commission  
PO Box 2351  
Wellington

Enquiries: (04) 924 3673  
Fax: (04) 924 3700

## THE APPLICATION

1. On 5 November 2004, the Commission received an application from TelstraClear Limited ('TelstraClear') under section 20 of the Act, for a determination of price and non-price terms for the provision of the bitstream access service and bitstream backhaul service (the 'Application').<sup>4</sup>
2. The Commission decided to investigate the Application under section 25 of the Act on 25 November.<sup>5</sup>
3. The Commission received submissions on the Application from TelstraClear and Telecom (together 'the Parties') on 16 December.<sup>6</sup>
4. On 18 January 2005, the Commission released for comment an outline of a proposed methodology for the imputation of the retail price for the bitstream access service.
5. On 28 January, the Commission received the cross submissions on the Application which included comment on a proposed methodology for the imputation of the retail price.
6. On 11 February, Commission staff held a workshop with the Parties, to clarify the technical issues contained in the Application.
7. On 18 April, TelstraClear withdrew the bitstream backhaul service from the Application.

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<sup>4</sup> TelstraClear, *Section 20: Application for Determination for Designated Access Services*, 4 November 2004. The Application is available on the Commission website at: <http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/Wholesale/WholesaleDeterminatons/telstraclearwholesalebitstreamserviceap.aspx>.

<sup>5</sup> Commerce Commission, *Decision Whether to Investigate the TelstraClear Application for Determination of Designated Access Services*, 25 November 2004. The Decision is available on the Commission website at the link above.

<sup>6</sup> Public versions of all submissions and cross-submissions are available on the Commission website at the link above.

## THE FRAMEWORK FOR THE DRAFT DETERMINATION

8. Section 18 provides that the purpose of Part 2 and Schedule 1, under which this draft determination is made, is to promote competition in telecommunications markets for the long-term benefit of end-users<sup>7</sup> of telecommunications services in New Zealand by regulating, and providing for the regulation of, the supply of certain telecommunications services between service providers.
9. Section 27 requires that after investigating the matter, the Commission must –
  - (a) prepare a determination; and
  - (b) give a copy of the determination to the parties to the determination; and
  - (c) give public notice of the determination
10. Section 28 requires that the Commission make reasonable efforts to prepare a determination under section 27 not later than 50 working days after the date on which it gave written notice to the parties of its decision to investigate, that being 15 February 2005. Despite reasonable efforts, the Commission was unable to meet that time limit.
11. Under section 29(a), a determination must, in the opinion of the Commission, be made in accordance with the applicable access principles and any limits on those applicable access principles, and any regulations made in respect of the applicable access principles<sup>8</sup>.
12. Sections 29(b) and (c) respectively provide that a determination must, in the Commission's opinion, comply with any relevant approved codes,<sup>9</sup> and in the case of a determination regarding a designated access service, be made in accordance with the applicable initial pricing principle (as affected, if at all, by clause 2 or clause 3 of Schedule 1 of the Act) and any regulations that specify how the applicable initial pricing principle must be applied.
13. Section 30 of the Act prescribes the matters to be included in the determination. A determination must include –
  - (a) the terms on which the service must be supplied; and
  - (b) the reasons for the determination; and
  - (c) the terms and conditions (if any) on which the determination is made; and
  - (d) the actions (if any) that a party to the determination must do or refrain from doing; and
  - (e) the expiry date of the determination

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<sup>7</sup> 'The end-user is the ultimate user of consumer of telecommunications services. It is not restricted to subscribers, but extends to telecommunications' users generally', Commerce Commission, *Determination on the TelstraClear Application for Determination for Designated Services*, Decision 477, 5 November 2002, p. 10.

<sup>8</sup> No such regulations have been issued.

<sup>9</sup> There are no such codes yet in existence

14. This draft determination concerns the designated access service, access to, and interconnection with, Telecom's fixed PDN, set out in subpart 1 of Part 2 of Schedule 1 (the 'bitstream access' service):

15. The bitstream access service is:

*Description of service:* An asymmetric digital subscriber line enabled service (and its associated functions, including the associated functions of Telecom's operational support systems) that enables access to, and interconnection with, that part of Telecom's fixed PDN that connects an end-user's building (or, in the case of commercial buildings, the building distribution frames) to Telecom's first asynchronous transfer mode (ATM) data switch or equivalent facility other than a digital subscriber line access multiplexer (DSLAM)

*Conditions:* That either-

- (a) Telecom faces limited, or is likely to face lessened, competition in a market for the service; or
- (b) Telecom does not face limited, or is not likely to face lessened, competition in a market for the service, and the Commission has decided to require that service to be wholesaled in that market

*Access provider:* Telecom

*Access seeker:* A service provider who seeks access to the service

*Access principles:* The standard access principles set out in clause 5

*Limits on access principles:* The limits set out in clause 6 and the following additional limits:

- (a) the service requires a maximum upstream throughput rate of 128 kbps for data traffic sent from the end-user; and
- (b) the service requires a downstream throughput rate for data traffic sent to the end-user that must---
  - (i) not be less than 32 kbps; and
  - (ii) have an average of not less than 256 kbps; and
- (c) the service is not required to support any function that relies on real time network capability; and
- (d) Telecom is only required to provide access to the trunk side of Telecom's first ATM data switch or equivalent facility (for which purpose a DSLAM is not an equivalent facility)

*Initial pricing principle:* Either---

- (a) retail price (as imputed by the Commission having regard to any comparable service) less a discount benchmarked against discounts in comparable countries that apply retail price minus avoided costs saved pricing in respect of the service, in a case where Telecom faces limited, or is likely to face lessened, competition in a market for that service; or

- (b) retail price (as imputed by the Commission having regard to any comparable service) less a discount benchmarked against discounts in comparable countries that apply retail price minus actual costs saved pricing in respect of the service, in a case where Telecom does not face limited, or lessened, competition for that service

*Final pricing principle:*

Either-

- (a) retail price (as imputed by the Commission having regard to any comparable service) minus a discount comprising avoided costs saved pricing, in a case where Telecom faces limited, or is likely to face lessened, competition in a market for the service; or
- (b) retail price (as imputed by the Commission having regard to any comparable service) minus a discount comprising actual costs saved, in a case where Telecom does not face limited, or lessened, competition for the service

*Requirement referred to in section 45 for final pricing principle:*

Nil

*Additional matters that must be considered regarding application of section 18:*

Nil

16. The Application raises a number of issues as to the scope of the designated access service. These issues are discussed in the following section.
17. In respect of the bitstream access service, the Commission is required to determine the relevant market or markets, and the state of competition in those markets. In a relevant market in which Telecom faces limited competition, the Commission may determine terms of access. In a relevant market in which Telecom does not face limited competition, the Commission may nevertheless determine that access should be provided if 'the Commission has decided to require that service to be wholesaled'.
18. The initial pricing principle for the bitstream access service requires that the Commission determine a wholesale price by imputing a retail price having regard to any comparable service, and deducting from that imputed retail price a discount benchmarked against discounts provided in comparable countries that apply retail price minus (i) avoided costs saved pricing, in respect of markets in which Telecom faces limited competition; or (ii) actual costs saved pricing, in respect of markets in which Telecom does not face limited competition.

## SCOPE OF THE BITSTREAM ACCESS SERVICE

19. The Application requests that the Commission determine specific non-price terms relating to the provision of the bitstream access service.

20. The bitstream access service is described in Schedule 1 as:<sup>10</sup>

An asymmetric digital subscriber line enabled service (and its associated functions, including the associated functions of Telecom's operational support systems) that enables access to, and interconnection with, that part of Telecom's fixed PDN that connects an end-user's building (or, in the case of commercial buildings, the building distribution frames) to Telecom's first asynchronous transfer mode (ATM) data switch or equivalent facility other than a digital subscriber line access multiplexer (DSLAM).

21. The parties to the Application appear to agree on the boundaries of the designated services set out in the service description. The Commission is satisfied that the description of service is sufficiently clear in that respect, being between an end-user's building and Telecom's first ATM data switch.

### Access Principles & limits on the application of Standard Access Principles

22. The standard access principles and their limits must be considered in deciding the scope of the bitstream access service. The scope of service must also be consistent with the additional limits on the access principles set out in the designated bitstream access service.

23. The parties do not agree on the application of these access principles and limitations.

24. Telecom submits that 'many of the non-price terms requested by TelstraClear are inconsistent with the general access principles in that they are not technically or operationally practicable having regard to Telecom's network.'<sup>11</sup>

25. TelstraClear submits that 'the purpose of access regulation is to require the incumbent to open its bottleneck facilities to competing downstream providers. Allowing the incumbent to implement technical solutions which are most convenient for it but which impair downstream competition will undermine the purpose of access regulation.'<sup>12</sup>

26. Section 29 states that:

A determination must, in the opinion of the Commission, -

(a) be made in accordance with -

(i) the applicable access principles and any limits on those applicable access principles;  
and

<sup>10</sup> See Telecommunications (Fixed Data Network) Order 2004, 2 August 2004, clause 3.

<sup>11</sup> Telecom submission, 16 December 2004, p. 7.

<sup>12</sup> TelstraClear cross submission, 28 January 2005, p. 21.

- (ii) any regulations made in respect of the applicable access principles and any limits on those applicable access principles.

27. The standard access principles and limits on the access principles applying to both designated services are:

**5 Standard access principles for designated access services and specified services**

The following standard access principles apply to designated access services and specified services:

- (a) *principle 1*: the access provider must provide the service to the access seeker in a timely manner:
- (b) *principle 2*: the service must be supplied to a standard that is consistent with international best practice:
- (c) *principle 3*: the access provider must provide the service on terms and conditions (excluding price) that are consistent with those terms and conditions on which the access provider provides the service to itself.

**6 Limits on application of standard access principles set out in clause 5**

Principles 1 to 3 set out in clause 5 are limited by the following factors:

- (a) reasonable technical and operational practicability having regard to the access provider's network:
- (b) network security and safety:
- (c) existing legal duties on the access provider to provide a defined level of service to users of the service:
- (d) the inability, or likely inability, of the access seeker to comply with any reasonable conditions on which the service is supplied:
- (e) any request for a lesser standard of service from an access seeker.

28. Additional limits to these standard access principles apply specifically to the bitstream access service. These additional limits are:

Limits on access principles set out in clause 6 and the following additional limits:

- (a) the service requires a maximum upstream throughput rate of 128kbps for data traffic sent from the end-user; and
- (b) the service requires a downstream throughput rate for data traffic sent to the end-user that must –
  - (i) not be less than 32 kbps; and
  - (ii) have an average of not less than 256 kbps; and
- (c) the service is not required to support any function that relies on real time network capability: and
- (d) Telecom is only required to provide access to the trunk side of Telecom's first ATM data switch or equivalent facility (for which purpose a DSLAM is not an equivalent facility)

29. The access provider is not obliged to provide a higher standard of service to an access seeker where the access seeker has made 'any request for a lesser standard of service'

30. It is not clear whether a 'lesser standard of service' refers to quality related standards of service or other dimensions of service provision and whether 'lesser' means relative

to the designated bitstream access service, relative to the principles of timeliness of provision, international best practice, or consistency with the service which the access provider provides to itself.

31. The Commission accepts that the technical service parameters of the bitstream access service supplied to TelstraClear must be consistent with the technical service parameters of the underlying network supporting Telecom's retail Jetstream services. However, the Commission does not consider that TelstraClear is requesting a lesser standard of service than international best practice or a 'lesser' standard than Telecom provides to itself or a lesser standard of timeliness. TelstraClear is seeking a standard of service which is consistent with the regulated service description for bitstream.

## MARKET DEFINITION AND COMPETITION ASSESSMENT

32. This section provides the Commission's analysis of the relevant market for the bitstream access service, and whether Telecom faces limited competition in that market.

### Introduction

33. The conditions for bitstream access are:

That either –

- (a) Telecom faces limited, or is likely to face lessened, competition in a market for the service: or
- (b) Telecom does not face limited, or is not likely to face lessened, competition in a market for the service, and the Commission has decided to require that service to be wholesaled in that market

34. The Commission must accordingly identify the market in which the bitstream access service is supplied and the state of competition in that market.
35. The market discussed below forms the basis of the competition assessment. However, the concept of a market is an instrumental one, the defining of which is not an end in itself, but rather is an exercise intended to cast light on, or to assist with the analysis of, the conduct at issue. In *Queensland Wire*, the Court stated:<sup>13</sup>

In identifying the relevant market, it must be borne in mind that the object is to discover the degree of the defendant's market power. Defining the market and evaluating the degree of power in that market are part of the same process, and it is for the sake of simplicity of analysis that the two are separated...

36. The process of identifying the relevant market(s) should keep in mind the object of so doing. In the present case, the objective is to determine the nature of the competition Telecom faces in the market in which bitstream access services are supplied
37. For the purpose of undertaking an assessment of the level of competition within a market, the standard process of establishing market boundaries can be seen as one of identifying the smallest area of product, geographic and functional space over which a hypothetical monopolist could exert a significant degree of market power<sup>14</sup>. This approach focuses on all those close substitutes whose presence would prevent a hypothetical monopolist from exercising market power by raising its price or by other means. Such substitutes must be included in the market within which the hypothetical firm is to be a monopolist. Included are both actual and potential substitutes on both the demand and supply sides of the market.
38. An appropriately defined market will include products which are regarded by buyers as being similar or close substitutes ('product' dimension), and in close proximity

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<sup>13</sup> *Queensland Wire Industries Pty Ltd v Broken Hill Pty Co Ltd* (1989) 167 CLR 177.

<sup>14</sup> In some instances, it may also be relevant to consider a temporal dimension of market definition. However, as noted later, this is not considered relevant in the current case.

(‘geographical’ dimension), and are thus products to which they could switch if the monopolist were to attempt to exert market power. It will also include those suppliers currently in production who are likely, in that event, to shift promptly to offer a suitable alternative product even though they do not do so currently.

39. One approach to identifying a significant degree of market power (in the context of market definition) is in terms of the ability of the hypothetical monopolist to increase profits by imposing a small but significant and non-transitory increase in price (a ‘ssnip’) above the competitive level. For the purposes of determining relevant markets, the Commission will generally consider a snip to involve a five to ten percent increase in price for a period of at least one year. Starting from a small initial group of close substitutes, other potential substitutes are added to the group, until the hypothetical monopolist is able to profitably impose a snip. When this occurs, then all possible close substitutes must be encompassed by the proposed market definition<sup>15</sup>.
40. The degree of substitutability between telecommunications services, and thus the definition of telecommunications markets, is likely to be influenced by advances in technologies, and in particular the convergence of different technologies. The snip test allows for this. For example, by focusing on the relative functionality and pricing of services, the snip test assesses the extent to which services are regarded as economic substitutes. When considering the market for one service, if a second service passes this test, in the sense that sufficient switching would be expected so as to defeat the attempted price increase, that service should be included in the same market, irrespective of whether similar or different technologies are involved.
41. Therefore, in terms of the product dimension of telecommunications markets, the Commission considers this test to be a useful tool in assessing the likely demand-side and supply-side responses to a change in the relative price of functionally similar services. Importantly for a dynamic industry such as telecommunications, the New Zealand regulatory system allows for frequent regulatory reviews, at which point market definitions can be revisited in light of any technological or other developments.
42. The Commission defines relevant markets in terms of the following characteristics or dimensions:<sup>16</sup>
  - the goods or services supplied or purchased (the product dimension);
  - the geographic area from which the goods or services are obtained, or within which the goods or services are supplied (the geographic dimension);
  - the level in the production or distribution chain (the functional dimension);
  - the temporal dimension of the market, if relevant (the timeframe); and

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<sup>15</sup> If, in response to the price increase, the reduction in sales of the product would be large enough that a hypothetical monopolist would not find it profitable to impose such an increase in price, then added to the group should be that good that is the next-best substitute for the good in question. This incremental process requires those goods considered the most likely to be close substitutes for the good in question to be added first to the group subject to the *ssnip* test. If this did not occur there may be goods or services which are added to the group which are not close substitutes.

<sup>16</sup> See Commerce Commission, Mergers and Acquisitions Guidelines, December 2003, section 3.

- the different customer types in the market (the customer dimension).
43. While telecommunications services often have a temporal dimension, for example the use of peak and off-peak pricing, this is not considered to be of particular relevance to market definition in the current context. Most of the discussion below is in relation to the product and geographic dimensions of telecommunications markets, although the relevant customer and functional levels are also briefly considered.
44. However, markets are not always easy to define in practice. In part this is because the process itself is inevitably an imprecise one since transactions in the economy do not always fall neatly into a series of discrete and easily observable markets. Hence it may not be practical — nor, indeed, always necessary — to identify the precise boundaries of the activities included in a market. Moreover, as already noted, it is appropriate to tailor the definitions used to meet the requirements of the case in hand

#### *Section 64 Local Loop Unbundling Review*

45. During the Commission's section 64 investigation, consideration was given to the market in which bitstream access services are supplied. In addition to bitstream access provided by copper-based local loops, there are other forms of broadband access to customers, such as fibre, cable, satellite, fixed wireless and mobile cellular.
46. In its final report to the Minister, the Commission noted that convergence of access technologies:<sup>17</sup>
- ... does raise an important issue in terms of the current and future development of services available over fixed network platforms other than Telecom's local loop network. A number of competing broadband and data networks have been deployed in certain areas
47. As a result of this convergence, the Commission considered the effectiveness of alternative local access technologies as substitutes for Telecom's copper-based local loop network. For the purposes of that investigation, the Commission considered alternative broadband and data networks, including fibre-based access and fixed wireless access ('FWA'). The Commission concluded that FWA technology was unlikely to represent a sufficiently close substitute for Telecom's local loop network, due to the limitations of FWA arising in large part from the sharing of spectrum.
48. The Commission therefore focused on the presence of alternative fixed access networks, such as those deployed by TelstraClear, CityLink, and United Networks/Tangent.
49. In considering the relevant geographic markets, the Commission considered markets defined with reference to exchange service areas (ESAs), on the basis that these areas are associated with a Telecom exchange, and thus represented a natural unit of analysis. An access seeker would have regard to how many customers within an ESA it is likely to capture utilising LLU or bitstream access, and would decide on that basis whether to enter. The ability to secure customers within an ESA would be an

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<sup>17</sup> Commerce Commission "Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network", Final Report, December 2003, paragraph 342.

important determinant of the entry decision, in terms of defraying the fixed entry costs.

50. The ESA approach also allowed the Commission to identify those ESAs in which alternative networks had been deployed, and to assess whether competitive conditions within those ESAs were likely to differ from elsewhere.

*Telecom's commercial unbundled bitstream service*

51. Following the Minister of Communications' acceptance of the Commission's recommendation to designate bitstream access and backhaul, Telecom has developed a commercial unbundled bitstream service (UBS) offering. Telecom has made this offering available throughout New Zealand, and at a uniform national price. According to Telecom's UBS user guide,<sup>18</sup>

UBS is available nationwide where Telecom has deployed DSL based technology.

52. The UBS pricing distinguishes between residential and business end users, with the residential charge incorporating a volume-based pricing structure. However, there is no geographic de-averaging of the UBS access price.<sup>19</sup>

**Relevant Markets**

53. The following section sets out the Commission's assessment of the relevant market for the regulated bitstream access service.

*Summary of views of the parties*

54. TelstraClear submits that the relevant market is a national market for bitstream services, and that this is evidenced by Telecom's national pricing for UBS. TelstraClear notes that if sub-national markets are defined, the relevant markets should be based on aggregations of ESAs, referred to as Telecom's Unbundled Regional Service Areas (URSAs). While the Commission's unbundling report was concerned with a range of potential regulated access services, including full unbundling, line sharing, and bitstream access, the current issue only relates to bitstream. TelstraClear notes that:<sup>20</sup>

... the delivery of Telecom's wholesale bitstream service has not been based on the Telecom ESA and is based instead on Telecom's 34 Unbundled Regional Service Areas (URSAs), which are the "catchment" areas for Telecom's ATM switches.

55. Therefore TelstraClear submits that if a sub-national approach is taken to market definition in respect of bitstream services, the relevant markets should be based on the URSAs rather than the ESAs.

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<sup>18</sup> Telecom Unbundled Bitstream Service (UBS) User Guide, November 2004, page 5.

<sup>19</sup> *ibid*, page 13.

<sup>20</sup> TelstraClear UBS submission, 16 December 2004, paragraph 83.

56. Telecom's submission refers to metropolitan and non-metropolitan broadband access markets, with the metropolitan markets defined to encompass all competing broadband access networks, including fibre and wireless access networks. Telecom also refers to downstream markets for retail broadband internet access services in metropolitan and non-metropolitan areas.

57. In its cross-submission, Telecom states that:<sup>21</sup>

TelstraClear is incorrect to state that Telecom offers its commercial UBS service at a national price. The wholesale product prices are differentiated by metropolitan and non-metropolitan geographic areas.

*Commission view*

Product dimension

58. In determining the product dimension of the market in which bitstream services are supplied, the various local access products which may be regarded as substitutes for bitstream access are considered. In this sense, the Commission agrees with Telecom that the relevant market may be defined more broadly than for bitstream services, to the extent that there are economic substitutes for bitstream access. These alternative access products include alternative fixed access (such as cable and fibre-based access). The Commission has also considered whether wireless-based access (such as FWA) represents a sufficiently close substitute to be included in the same market.

59. TelstraClear has deployed a limited cable access network in Wellington and Christchurch, over which it supplies a range of retail telecommunications and broadband services. TelstraClear does not provide an intermediate wholesale access product over its cable network (which might be regarded as directly competing with a bitstream service). However, given that the retail services supplied over the cable network compete with Telecom's retail ADSL service, indirect substitution may constrain the pricing of a wholesale bitstream service in the areas served by the cable network. The extent of such substitution would depend on how retail prices adjusted in response to any increase in the bitstream price (which in turn is likely to depend on the proportion of the cost of the retail product represented by the cost of the bitstream input), and whether such retail price adjustment induced sufficient switching of demand away from ADSL services to make the original bitstream price increase unprofitable.

60. Given the importance of the bitstream service as an intermediate input to ADSL services, any bitstream price increase could be expected to result in a significant proportion of that increase being passed through into retail ADSL prices. In terms of any subsequent switching at the retail level, Ofcom recently concluded that:<sup>22</sup>

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<sup>21</sup> Telecom UBS cross-submission, paragraph 99.

<sup>22</sup> Ofcom "Review of the wholesale local access market", 16 December 2004, paragraph 3.72. In a similar review of the wholesale market for broadband access, Ofcom similarly found that "cable would be an indirect constraint on the behaviour of the ADSL based wholesale internet access provider to such an extent that the appropriate wholesale market definition would include both ADSL and cable." Ofcom "Review of the Wholesale Broadband Access Markets", 13 May 2004, paragraph 2.150.

... such pass-through could be expected to lead to a significant switch in retail demand away from the loop-based products. Ofcom is of the view that, overall, the extent of the resulting reduction in the derived demand for loop-based access at the wholesale would be sufficient to render the original wholesale price increase unprofitable.

61. This suggests that cable-based access should be regarded as being supplied in the same market as wholesale bitstream access.
62. In terms of fibre-based access, operators such as CityLink and United Networks/Tangent have deployed localised fibre networks. These networks can support a range of retail services, including high-capacity broadband and data services. The potential capacity of fibre connections is significantly higher than copper-based connections, and this is reflected in the pricing of higher end retail data services.
63. Fibre-based services tend to be high-speed and symmetric services, whereas retail ADSL services are asymmetric. These differences may suggest that fibre-based services may not be regarded as being substitutable for ADSL services. If, for example, the cost of supplying symmetric services is significantly different from the cost of supplying asymmetric services, the ability of the former to constrain the pricing of the latter may be limited.
64. However, the fibre-based networks do appear to offer services that are comparable to retail ADSL services. For example, CityLink’s range of “Connect 4” offerings is a wholesale symmetric broadband service, designed specifically for SMEs. The Citylink Connect plans appear to be competitively priced against the Jetstream plans. Given the comparable pricing, and the symmetric nature of the Citylink plans,<sup>23</sup> it appears that these fibre-based services may be substitutable for an ADSL-based service.
65. The CityLink Connect service offers symmetric speeds of 4 Mbps, and includes a number of variants.

**Table 1: CityLink Connect Plans (and comparable Telecom Jetstream plans)**

Citylink plan	Monthly fee	Cap	Telecom plan	Monthly fee	Cap
Connect 1	\$199	1GB	Jetstream 1200	\$140	1.2GB
Connect 5	\$249	5GB	Jetstream 5000	\$475	5GB
Connect 10	\$349	10GB	Jetstream 10000	\$905	10GB

66. CityLink offer their service through Service Providers within the Wellington region, as does United Networks/Tangent (Wellington and Auckland), who are likely to offer similar sorts of services.

<sup>23</sup> The symmetric offering can be used to support greater functions than an asymmetric offering such as Jetstream.

67. Therefore, the emergence of fibre-based networks is particularly relevant to high-end data services, but also appear to offer broadband options at the SME end of the spectrum.
68. In terms of FWA technology, one key disadvantage that the Commission identified in the Section 64 investigation related to the sharing of radio spectrum among FWA customers, which has implications for contention ratios and the cost-effectiveness of delivering business-grade services. However, the regulated bitstream service is restricted to an internet-grade service, and hence the limitations of FWA technology may be less significant, given this restriction. This suggests that some weight be placed on FWA as an alternative to the regulated bitstream service.
69. The Commission notes that a number of suppliers have started offering broadband services using FWA technology. These suppliers typically target SME and residential demand, and appear thus far to have established similar pricing points as ADSL-based services.
70. Although it did not receive attention in the submissions on the Application, the Commission has given some consideration as to whether the emergence of 3G mobile services may have any implications for the markets defined in this determination. In the past, mobile data services have been restricted in terms of the speed and range of services that could be delivered over a mobile network. However, with the deployment of 3G mobile networks, these limitations are likely to be relaxed over time.
71. At this stage, it is unlikely that a supplier of 3G mobile services would constrain a supplier of fixed network-based broadband internet access services. While available speeds are significantly higher than 2G services,<sup>24</sup> it is likely that relatively high pricing for mobile broadband services may limit their substitutability for the services relevant to this determination. This pricing includes upfront costs such as the purchase of a data card, as well as the monthly and per-MB charges.
72. According to Telecom's website, a Mobile Broadband Data Card costs between \$0-\$699, depending on the plan and contract term. Telecom's Mobile Broadband plans range from the low usage Mobile Broadband Casual plan (\$0 per month, per-MB fee \$8), to the heavy use Mobile Broadband 500 plan (\$199 per month, 500 MB per month included, \$0.50 per additional MB).
73. By comparison, Telecom's Jetstream 600 service has a similar monthly data allowance (600 MB) as the Mobile Broadband 500 plan (500 MB). However, the Jetstream 600 plan has a monthly fee of \$61.33, and a charge of \$0.18 per additional MB (compared to \$199 per month, and \$0.50 per MB). Jetstream installation charges range from \$88 to \$220, while modems cost around \$300.<sup>25</sup> In addition, the Jetstream 600 plan provides download speeds of up to 2Mbps. In other words, the Jetstream 600 plan includes a slightly higher monthly data allowance, at a significantly lower monthly price (and lower additional per-MB charge), and also has a higher download speed.

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<sup>24</sup> For example, Telecom's T3G mobile network offers peak average download speeds of up to 500 kbps in certain centres, compared to speeds of 40-80 kbps available over its CDMA network.

<sup>25</sup> Telecom website.

74. It therefore appears unlikely at this stage that 3G mobile services are supplied within the same market as Jetstream services. However, this is based on evidence of existing services. As 3G networks are more extensively deployed over time, and 3G services become established, it may be appropriate to review this finding.
75. The product market can therefore be defined as the market for wholesale broadband access, including copper-based bitstream, cable, fibre, and FWA (but excluding 3G mobile services).
76. Telecom has also suggested that the market in which bitstream services are supplied should be delineated along customer and speed lines. While separate customer markets have been previously defined at the retail level, it is not clear why this would necessarily result in customer markets at the wholesale functional level at which bitstream services are supplied. A bitstream service as an input to a retail service does not differ depending on the classification of the end-user as either residential or business. Differences in the level of customer support may distinguish between retail customer groups, but these are features of delivery of the retail service, rather than relating to the upstream input. For example, in its section 64 investigation draft report, the Commission considered the question of customer segmentation, and noted that:<sup>26</sup>
- At the retail level, the Commission has previously defined residential and non-residential customer markets. For example, in a number of markets there is evidence of retail price discrimination between residential and business customers.
- ...
- The corporate:SME distinction was largely based on retail-related factors, such as the level of sales and post-sales support dedicated to corporate customers compared to smaller businesses and price discrimination. While these factors are relevant to consideration of retail markets, it is not clear that they would translate into a similar distinction at the network or wholesale level. A supplier of wholesale LLU services is indifferent to the type of end-user.
77. In that case, the Commission defined a single market for the provision of local loop services, without distinction between residential and business connections. For the same reasons, separate customer markets do not appear to be relevant to the market in which bitstream services are supplied.
78. In terms of Telecom's suggestion of separate markets for bitstream services up to 1 Mbps, and bitstream services over 1 Mbps, it is again unclear why such a distinction would be appropriate. Although Telecom suggests there are different suppliers in each segment, both Telecom and Wired Country are present in both segments. In addition, although pricing is generally higher in the over-1Mbps segment, there are in fact a range of different speeds of service. It is not clear that there would be a sufficient break in substitutability around any particular service speed to justify a separation of markets in this way.
79. The Commission considers that the relevant product dimension is the market for broadband access.

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<sup>26</sup> Commerce Commission "Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network", Amended Draft Report, October 2003, paragraphs 388, 391.

### Functional dimension

80. Bitstream access is used as an input into the provision of downstream end-to-end broadband services. The relevant functional dimension of the market in which bitstream access services are supplied is the wholesale level.
81. Telecom submits that the wholesale broadband access market should not be considered in isolation from competition in the relevant downstream retail markets.
82. The above discussion of the product dimension does take into account the uses to which different forms of bitstream access are put. The main retail market is the market for broadband internet access. Telecom's Jetstream services are supplied in this retail market, along with a number of other broadband access services.
83. Although the Commission has previously considered retail markets for telecommunications services, including retail broadband services, it is appropriate to focus on markets and competition at the wholesale level for the purposes of this determination. It is the availability of different forms of wholesale entry, including facilities-based entry and various forms of wholesale access, that determines the level of competition at the retail level.

### Geographic dimension

84. The geographic dimension of the relevant market is usually defined with reference to the area within which demand- and/or supply-side substitution can take place. If a *ssnip* imposed by a hypothetical monopolist in a narrowly defined area resulted in suppliers in other areas switching capacity to serve customers in that area, or in customers switching to suppliers located elsewhere, it might be appropriate to expand the geographic market boundary to include those areas in which the switching takes place.
85. However, such an approach applied to telecommunications services is likely to lead to extremely narrow markets, possibly at an individual customer level. Consideration is therefore usually given to the extent to which there may be a uniform or common pricing constraint, and to determine geographic markets on that basis. For example, in relation to residential local access services, the Commission has previously taken into account differentials in retail pricing in defining sub-national markets.<sup>27</sup>
86. The Commission also recognises that the deployment of competing infrastructure is likely to be relevant, in particular where this has generated geographic pricing responses which suggest that competitive conditions in those areas are likely to differ. In both Decisions 525 and 497, the Commission recognised that competing access infrastructure had been deployed in parts of New Zealand, and that this had led to geographically differentiated pricing for some services. Both of these factors were relevant in determining the geographic boundaries of the relevant markets.

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<sup>27</sup> Commerce Commission, Decision 525, paragraph 198.

87. The Commission considers it appropriate to examine any geographic pricing constraints faced by Telecom in supplying a particular service. In some cases, such a constraint may be exogenously imposed on Telecom. For example, under the Telecommunications Service Obligation Deed, Telecom is required to maintain a uniform residential line rental in respect of rural areas, although has some ability to selectively offer lower line rentals on a geographic basis.<sup>28</sup>
88. At the time of the section 64 investigation, bitstream service was not commercially available in New Zealand. The Commission therefore determined geographic markets without reference to any wholesale pricing behaviour. An ESA approach was taken for reasons set out above.
89. In its submission on the decision to investigate, Telecom argues that the market definitions adopted by the Commission in the section 64 investigation and Decision 497 are inappropriate for the current assessment, and that a fuller factual and commercial commonsense analysis is required.<sup>29</sup>
90. The Commission agrees with Telecom and TelstraClear that the markets defined in the section 64 investigation may not be relevant to the current determination. For example, given that the current application relates to the designated bitstream service, the use of ESAs is unlikely to be appropriate. Consideration of ESAs was relevant to the section 64 investigation, as access seekers would likely assess the feasibility on an ESA basis of acquiring local loops to provide services. However, in the current case, it would appear that access seekers would be less concerned with individual ESAs, and would instead consider the wider URSA against which the bitstream service is defined.
91. Furthermore, as noted earlier, in respect of the commercial UBS product which has emerged since the Commission's section 64 investigation, Telecom has set a uniform national bitstream access price, and offers the service on a national level. As noted earlier, Telecom's cross-submission disputes this, with Telecom instead submitting that its commercial UBS prices are geographically differentiated by metropolitan and non-metropolitan areas. However, Telecom's UBS User Guide does not provide for geographic de-averaging of the UBS access price. The access fee distinguishes between residential and business end users, as per Table 2 below. In addition, the residential access charge has a volume-based structure, varying according to the number of monthly net connections. There is no volume-based structure for business end users. In addition, there is no geographic de-averaging of the UBS access price.

**Table 2: Telecom's Commercial UBS Access Fee**

Net Connections/Month	Residential			Business (256/128)
	(256/128)	(1024/128)	(2048/128)	
0-150	\$27.95	\$31.70	\$33.85	\$40.60
151-500	\$25.50	\$29.25	\$31.40	\$40.60
> 501	\$24.50	\$28.25	\$30.40	\$40.60

<sup>28</sup> In such a case, where a uniform pricing constraint has been imposed by regulation, it should not be assumed that such uniform pricing would continue absent that regulation.

<sup>29</sup> Telecom submission, 16 December 2004, paragraph 94.

92. This indicates that Telecom's commercial assessment of, and response to, market developments in respect of its bitstream service is based on a national market.
93. Telecom's submission notes that:<sup>30</sup>
- The geographic dimension of a market encompasses those areas in which a sufficient number of marginal customers could switch demand in the face of an increase in local prices, or entrants could easily switch to the supply of services in that area.
94. Such switching of marginal customers in those areas where competing broadband access networks have been deployed appears to have been insufficient to warrant geographic price differentiation.
95. Telecom's cross-submission refers to a number of obligations and constraints which it faces. These include Telecom's commitment to achieving 250,000 residential broadband subscribers by December 2005; the mass-market nature of Jetstream services, which are marketed through national advertising campaigns; and possible adverse public perception of Telecom, were it to geographically de-average its prices.
96. When defining the geographic dimension of markets, the Commission considers a range of factors,<sup>31</sup> including product value and transport costs, as well as:
- the extent to which the prices of a product in different geographic areas move in unison;
  - the geographic scope and spread of advertising by market participants.
97. These factors correspond to a number of the constraints referred to by Telecom, and are, in light of Telecom's submission, indicative of a national market. In terms of the ability to exercise market power by raising prices, the above constraints identified by Telecom support the use of a national market as being the smallest area over which prices would be expected to be raised.
98. Although the Section 64 investigation defined geographic markets with reference to ESAs, market developments since the completion of that investigation support the definition of a national market in which bitstream access is supplied.<sup>32</sup>
99. The Commission therefore considers that the relevant geographic market dimension for the purposes of this determination is national. The Commission accepts that within this national market, there will be differing levels of competitive intensity, given the localised deployment of competing infrastructure. However, the Commission's view is that a national market is supported by pricing behaviour and other constraints relating to the supply of broadband services.

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<sup>30</sup> Telecom submission, 16 December 2004, paragraph 104.

<sup>31</sup> See Commerce Commission, Mergers and Acquisitions Guidelines, December 2003, section 3.

<sup>32</sup> For a similar approach to telecommunications access market definition, see Ofcom "Review of the wholesale local access market", 16 December 2004, paragraphs 3.132-3.158.

### **Conclusion on market definition**

100. The Commission's view on the relevant market is to adopt a national wholesale market for the provision of broadband access.

**Comment is sought on the proposed market definitions. In particular:**

**Question 1: To what extent should the relevant wholesale product market be more broadly defined than bitstream only? In particular, please comment on the preliminary view that ADSL, cable, fibre and FWA-based broadband access services should be included in the same market.**

**Question 2: Bearing in mind the pricing referred to above, to what extent are symmetric and asymmetric broadband services substitutable?**

**Question 3: To what extent is Telecom's commercial UBS pricing geographically differentiated?**

### **Competition assessment**

101. The following section sets out the Commission's view on whether Telecom faces limited, or is likely to face lessened, competition in the relevant market identified above.
102. In assessing whether competition in a market is limited, the Commission has previously considered the following factors:

#### *Existing Competition*

- the number and relative size of competitors in the market, including where possible an assessment of trends in shares over time;
- the extent to which there is product differentiation;
- the degree to which competitors engage in independent rivalry;
- the degree of vertical integration;
- the absence of barriers to customer switching;
- the movement in prices over time, and any evidence of their broad relationship to underlying costs;
- the existence of any countervailing power;
- the constraints imposed by the regulatory environment; and
- evidence that the access provider is acting inefficiently or achieving excess returns.

### *Potential Competition*

- the potential for entry and the significance of any barriers to entry that may exist, and evidence of recent entry;
- the movement in prices over time, and any evidence of their broad relationship to underlying costs;
- the constraints imposed by the regulatory environment; and
- evidence that the access provider is acting inefficiently or achieving excess returns.

103. The Commission has used these factors in the following competition assessment.

#### *National wholesale market for the provision of broadband access*

##### Existing competition

104. In the Section 64 investigation, the Commission concluded that the wholesale market in which bitstream access was supplied was subject to limited competition in all areas with the exception of a small number of ESAs. In those five ESAs (out of a total of more than 700 ESAs), multiple competing fixed access networks had been deployed. However, outside of those areas, deployment of alternative fixed networks was generally limited to TelstraClear fibre networks serving limited numbers of business premises.
105. In its submission on the Application, Telecom argues that the market definitions and competition assessments undertaken by the Commission during the Section 64 investigation are not appropriate for the current determination. In particular, Telecom submits that the rate of deployment of broadband internet access technologies has continued since the Section 64 investigation. Telecom lists more than 20 entrants who compete with Telecom in the provision of broadband access.
106. A number of these operators resell services delivered over a wholesale network. Examples include ICONZ (who resell BCL and CityLink services), Actrix (CityLink), and Wave Internet (Wired County). Network operators include TelstraClear, Woosh, Wired County, Pacific.net, BCL, Vector and CityLink. In total, Telecom list 12 competing broadband networks, representing a range of access technologies including cable, fibre, FWA, and satellite.
107. A number of these networks are present in parts of Wellington and Auckland. There has also been some regional deployment in smaller centres, especially based on FWA and satellite technology.
108. The majority of the networks listed in Telecom's submission were also present during the Section 64 investigation. It appears that a number of new localised entrants may have emerged more recently, although these are based on wireless technologies.

Telecom's submission refers to continuing deployment of wireless-based access by operators such as Woosh and TelstraClear.<sup>33</sup>

109. Despite deployment of competing networks, Telecom's share of wholesale broadband access connections remains significant.<sup>34</sup> For example, according to Telecom,<sup>35</sup> the number of broadband customers connected to Telecom's network is 168,272 customers. Of this total, 136,124 were retail customers with the remaining connections supplied by Telecom to retail competitors, for example on a resale basis or under Telecom's commercial UBS offering. Telecom's broadband connection summary as of 31 December 2004 is presented in Table 3 below.

**Table 3: Telecom Broadband Connections<sup>36</sup>**

	<b>30 Sept 2004</b>	<b>31 Dec 2004</b>	<b>Quarter growth</b>
Retail connections	93,900	136,124	42,224
Resale connections	19,204	21,645	2,441
UBS connections	2	7,138	7,136
Wholesale connections	2,186	3,365	1,179
<b>Total connections</b>	<b>115,292</b>	<b>168,272</b>	<b>52,980</b>

110. The current determination relates to the bitstream access service. As noted earlier, bitstream access is primarily used to provide retail broadband internet services. It is also used as an input into the various wholesale offerings reported in Table 3. For example, in the case of resale, a bitstream access component is implicit in the end-to-end service being resold. Telecom's commercial UBS offering is specifically a bitstream product. Therefore, in considering the market in which bitstream services are supplied, it is appropriate to aggregate Telecom's retail and wholesale broadband connections. As noted above, these amounted to just over 168,000 connections as of December 2004.<sup>37</sup>
111. The Commission considers that the functionality and cost limitations of FWA technology are likely to confine its role for the foreseeable future as a competitive platform for broadband internet access. Although FWA is currently deployed throughout parts of New Zealand<sup>38</sup>, the advances in services being delivered over

<sup>33</sup> Telecom submission, 16 December 2004, page 30.

<sup>34</sup> In Telecom's submission (27 August 2002) responding to TelstraClear's initial wholesale application, Telecom estimated that fixed network competitors had the potential to reach 35% of its business customers nationwide. This referred to the coverage of the competing fixed networks. The actual market share of those fixed network competitors is almost certainly significantly smaller, as Telecom continues to compete vigorously for those customers able to receive offers from competitors. A comparable figure for residential customers was not provided.

<sup>35</sup> Telecom Media Release, 4 February 2005.

<sup>36</sup> Telecom Media Release, 4 February 2005

<sup>37</sup> If retail connections were instead used, those retail services supplied by Telecom's competitors that rely on access to Telecom's network (such as through resale or commercial UBS) would be limited in their ability to engage in independent rivalry.

<sup>38</sup> Woosh is expanding its network in Auckland, Wellington, Christchurch and Southland, and is planning further rollouts in cities such as Dunedin and Hamilton. Other operators such as ihug, Watchdog, Packing Shed and Wave supply retail broadband products in Auckland, Pukekohe and Hamilton, using the Wired Country network, while ICONZ supplies SDSL services based on the BCL network.

higher capacity fixed broadband infrastructure suggest that FWA may be limited in its ability to act as a widespread constraint. As end-user applications demand more and more bandwidth over time, the economics of FWA may come under greater pressure.<sup>39</sup>

112. In this determination, the Commission is concerned with the state of competition over a limited two year period. In giving limited weight to the potential of FWA to act as a constraint on fixed suppliers of broadband access during that period, the Commission recognizes that emerging technologies such as WiMax and increasing enhancements to the reach and speed of FWA networks may shift the competitive boundaries in the longer term.
113. In terms of the number of customers served using fixed wireless broadband access, one estimate places the number at around 15,000 customers.<sup>40</sup> The majority of these customers appear to be supplied by Woosh, which reported a customer base of around 10,000 in late 2004.<sup>41</sup>
114. TelstraClear provides broadband access over its cable network to residential and business customers. TelstraClear has informed the Commission that it currently provides retail broadband internet access over its own network to [ ]TCLRI business customers and [ ]TCLRI residential customers.<sup>42</sup>
115. Based on the above customer numbers, Telecom is estimated to have around [ ]RI of broadband connections in New Zealand, when fixed wireless access is included.
116. In the TelstraClear wholesale draft determination,<sup>43</sup> the Commission considered the provision of broadband internet access to residential and business customers in New Zealand. Although that consideration was at the retail level, the number of retail broadband subscribers provides an indication of market shares at the wholesale level. In that draft, the Commission found that Telecom accounted for approximately 77% of total broadband connections in New Zealand.
117. During the section 64 investigation, TelstraClear commented on its forecasts for broadband growth over the medium term:<sup>44</sup>

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<sup>39</sup> This trend is becoming apparent when recent offerings by Woosh and Telecom are compared. Both operators offer a product with a 10Gb monthly cap. Both services are priced at \$69.95 per month (the Telecom service is for Telecom home line and calling customers. For customers who take direct dial calling from another supplier, the broadband service is priced at \$79.95 per month). However, the Woosh service has a download speed of 250 kbps, whereas the Telecom service has a download speed of 2000 kbps. In other words, the Woosh price/bandwidth ratio is currently 0.28, while the Telecom ratio is 0.035 (or 0.04 where direct dial calling is excluded).

<sup>40</sup> <http://www.researchandmarkets.com/reports/c11974/>

<sup>41</sup> Woosh media release “Woosh sharpens its competitive edge”.

<sup>42</sup> In addition to these “on-net” totals, TelstraClear also provides retail services by reselling Telecom’s Jetstream service.

<sup>43</sup> Commerce Commission “Draft Determination on the TelstraClear Application for Determination for “Wholesale” Designated Access Services”, 25 November 2002.

<sup>44</sup> TelstraClear letter to Telecommunications Commissioner, 3 July 2003.

]TCLRI

118. During those proceedings, TelstraClear also indicated that it [ ], and that:<sup>45</sup>
- [ ]TCLRI
119. The number of broadband connections in New Zealand has increased significantly in recent years. Telecom in particular has been rapidly increasing the number of retail broadband subscribers connected to its network, from around 39,000 subscribers in 2002<sup>46</sup> to 136,124 customers as of December 2004.<sup>47</sup> When resale and wholesale customers (such as Telecom's UBS customers) are included, a total of 168,272 subscribers are supplied with broadband connections using Telecom's network. This represents an increase of 46% over the 3 months to December 2004.
120. The number of customers served by wireless operators such as Woosh has also increased recently; for example, as noted above, Woosh currently serves around 10,000 customers, compared to half that number 6 months ago. It appears that this growth reflects increasing levels of coverage, as well as increasing penetration in any particular coverage area. Further expansion in coverage is likely to continue, with a recent announcement that Woosh is purchasing 180 base station units. These units are to be used to increase the capacity available on Woosh's 80 existing cell sites, as well as to extend its network coverage into new areas.<sup>48</sup>
121. Although such growth is likely to moderate, this does suggest that FWA operators in particular are reaching increasing numbers of potential customers throughout New Zealand.
122. There do, therefore, appear to be an increasing number of competitors supplying broadband services in New Zealand. Further, it appears that broadband growth in New Zealand is relatively immature, with customer numbers increasing from low bases. Nevertheless, a large share of customer connections is concentrated on Telecom's network, and there is some evidence suggesting Telecom's market share has increased since 2002.
123. In addition to market shares and movements in market shares, the existence or otherwise of any barriers to customer switching is an important consideration. In this regard, the Commission notes that Telecom's pricing of its commercial UBS offering includes a churn fee of \$101.75 for residential and \$105.50 for business. The churn fees apply where an access seeker signs up an existing Telecom retail customer.
124. As discussed later, Telecom has provided some information on the costs it incurs when a customer switches from its retail service to a competing service supplied by a

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<sup>45</sup> TelstraClear letter to Telecommunications Commissioner, 30 June 2003, section 3.8.

<sup>46</sup> Telecom Annual Report 2002, page 33.

<sup>47</sup> Telecom Media Release, 4 February 2005.

<sup>48</sup> The Line, 15 April 2005.

wholesale customer of Telecom. This information suggests that the existing commercial UBS churn fees referred to above are significantly in excess of the costs Telecom incurs in churning a customer to a competitor. This is likely to inhibit efficient levels of customer switching, and thus impede competition between existing (and potential) suppliers of broadband services. The significance of this is likely to be heightened as Telecom drives broadband penetration on its network.

125. In terms of pricing, Telecom argues that it has significantly reduced its residential and business broadband prices and improved service quality since the completion of the Section 64 investigation. In addition to price reductions, Telecom has also increased the monthly data caps applying to a number of its Jetstream products.
126. For example, Telecom refers to Jetstream pricing reductions that have occurred since late 2000, when the minimum price was \$89. Telecom quotes the following plans as evidence of these price reductions.

**Table 4: Telecom Pricing Comparison**

<b>September 2003</b>	<b>Data Cap</b>	<b>Price</b>
Xtra JS Home 256K	500 MB	\$49.95
(256K/256K)	1 GB	\$59.95
	2 GB	\$69.95
<b>March 2004</b>		
Xtra JS Surf	1 GB	\$39.95
(256K/128K)	3 GB	\$49.95
	Flat rate	\$69.95

127. According to Telecom,<sup>49</sup>
- ... these market changes show that Telecom is responding to the government's aim to grow penetration of broadband services and to the active competition it faces, particularly from wireless competitors.
128. The plans referred to in Table 4 above have relatively low downstream speeds (of 256 kbps), although the speed of the earlier plan priced at \$89 is unclear. The Commission notes that Telecom announced its entry-level Jetstart plan (128 kbps) in December 2000, with a monthly price of \$29.95.<sup>50</sup>
129. It is, however, clear that Telecom has introduced a number of new services, and for a number of existing services, has increased the value per dollar (through price reductions and increased data caps) for customers. This may, at least in part, be a response to competitive developments, including those utilising FWA technology.
130. It is also likely that the proposed designation of a bitstream service resulting from the Commission's investigation and the launch of Telecom's commercial UBS offering may have provided some stimulus for these price reductions. This is based on the

<sup>49</sup> Telecom submission, 16 December 2004, paragraph 142.

<sup>50</sup> Telecom news release, 8 December 2000. Until the introduction of Jetstart, the Jetstream plans are understood to have had download speeds of 2 Mbps. This suggests the comparison in Telecom's submission may involve plans of considerably different speeds.

timing of the reductions, given that a number of the wireless deployments and announcements of FWA extensions had been in place for some time prior to the recent price reductions referred to by Telecom.

131. The Commission considered this issue in its final section 64 report to the Minister. The Commission noted that Telecom had previously responded to fixed network competition by reducing its prices on a geographic basis as soon as that competition emerged (or even prior to the activation of competing network, as was the case in Christchurch):<sup>51</sup>

These are examples of the way in which Telecom has responded on price to the entry of TelstraClear. In the case of the new residential pricing introduced in early 2001, this response actually pre-empted the commercial offering of TelstraClear.

132. The Commission then considered the response of Telecom to the emergence of BCL and Woosh, noting that the response (as of that date) had been relatively muted. A new 256 kbps service had been introduced in September 2003, and Xtra's monthly Jetstream prices were reduced by \$10.<sup>52</sup>

However, no changes have been made to the pricing of Telecom's residential Jetstream-only plans, despite the entry of two FWA networks. In addition, it does not appear that Telecom has altered any of its Jetstream business plans.

That is not to say that Telecom will not respond in some way in the future. However, at this stage, the emergence of two FWA platforms does not appear to have initiated a significant competitive reaction from Telecom. This is compared to its previous response to local fixed access network competition, for example in Wellington and Christchurch.

133. Telecom's recent price reductions and introduction of new services have taken place against a backdrop of some competitor developments as well as proposed and actual regulatory intervention. It therefore appears that Telecom has reduced a number of its prices over time, and that these reductions are likely to have been in part a response to emerging competition, and in part a response to the threat of regulation.
134. It is also likely that in setting a national price at both the wholesale and retail level, Telecom has balanced constraints from competitors in some geographic areas with the relative absence of constraints in other areas. The resulting prices would not be expected to fully reflect the constraints existing in areas with more competing access networks. The Commission notes that the availability of competitive higher speed and symmetrical services in some areas has not driven the availability of equivalent functionality in Telecom's national service.

### Potential competition

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<sup>51</sup> Commerce Commission, *Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*, Final Report, December 2003, paragraph 391.

<sup>52</sup> *ibid*, paragraphs 395-396.

135. The nature and the height of the barriers to entry into this market depend on the form of that entry. There are a number of technologies that are used to deliver broadband internet access. For example, a new facilities-based entrant could use fixed infrastructure such as copper or fibre loops to provide ADSL services, or could alternatively provide broadband services using FWA.
136. In terms of deploying a fixed local loop network over which broadband access could be delivered, a significant entry barrier is the extent of sunk costs. These costs largely relate to the digging of trenches to house the copper or fibre cables, or alternatively the hanging of such cables from poles. Once these costs have been incurred, they cannot be recovered upon exit from the market. For a potential provider contemplating entry, the presence of these costs will be an important consideration.
137. In considering the barriers to network deployment, the ACCC has previously noted that:<sup>53</sup>

... the sunk nature of the customer access infrastructure increases the riskiness of that investment. Modelling work by Commission consultants indicates that trench and cable costs account for about 70 per cent of the costs of building a new fixed customer access network. Both these and, in particular, trench costs are likely to be sunk to a large degree. This means that investment in alternative customer access networks is difficult to reverse without incurring large losses due to the limited alternative uses for the investment.

138. Although these costs tend to be lower in the case of aerial lines, the deployment of an overhead network is likely to require additional consents. Even in relatively densely populated residential areas such as Auckland, new entry has not eventuated, and the Commission is aware that TelstraClear has in the past experienced difficulties and delays in obtaining the necessary consents to deploy such a network. The costs associated with obtaining such consents are irrecoverable. The consent process is also likely to delay any new entry.
139. A second type of entry barrier is the presence of economies of density in a local telecommunications network. Given the high level of fixed costs in a telecommunications network, increasing the number of subscribers or traffic reduces the unit costs of such a network. Unless a new entrant can capture a significant share of the market, it is likely to operate at a higher unit cost, and this is likely to limit the prospect of new entry.
140. Both Oftel and the ACCC have recognised the effect of scale economies on entry conditions. For example, in examining the barriers to new entry into the access market, Oftel identified sunk costs and economies of scale as important factors:<sup>54</sup>

BT's economies of scale and scope, which are not available to the entrant, may reinforce its strategic advantage. The economies of scale and scope are, in part, due to the ubiquity of BT's network and legacy effects derived from its former monopoly status. The effect of these is to lower the marginal costs faced by BT. From the point of view of a potential entrant, it is less profitable to compete with an incumbent firm who has a lower rather than higher marginal cost level, because the incumbent is likely to compete more aggressively the lower its marginal

<sup>53</sup> ACCC, "Declaration of local telecommunications services", July 1999, page 48.

<sup>54</sup> Oftel, "Final direction on LLU backhaul services", 8 August 2002, paragraph B59.

costs. Thus, the economies of scale and scope mean that the risk of not recovering sunk entry costs is greater and the strategic entry barrier is more effective.

141. The continuing recent deployment of FWA by operators such as Woosh suggests that some of the above entry barriers may not be as significant for wireless-based entry. In particular, entry using FWA avoids some of the significant sunk costs involved in rolling out a fixed access network.
142. It also appears that FWA technology can be deployed in a timely manner, such that it would emerge within a two-year timeframe. However, as noted earlier, there are some limitations in terms of FWA-based services being able to compete with fixed broadband services such as ADSL, particularly with respect to increasingly bandwidth-intensive services. Although it appears that Woosh has been able to increase its broadband customer base significantly, it is also noteworthy that Telecom has continued to increase its market share.
143. In light of the above, it appears that new entry may emerge through the continuing deployment of FWA, although such entry is likely to be limited in its ability to constrain fixed market participants.

### Conclusion

144. In summary, there are a number of competing suppliers of broadband access, using a range of technologies. In addition to Telecom's ADSL-based services, competitors offer broadband access across cable and fibre networks, as well as networks based around FWA.
145. Although there is evidence of entry, Telecom's share of broadband connections remains high, at an estimated [ ]%, and there is some evidence that this share has been increasing in recent years. This is despite the emergence of FWA providers in particular, who can relatively rapidly deploy networks.
146. Telecom's price points have been declining in recent years, and non-price terms, such as monthly data caps, have also improved. The Commission considers that this is at least in part a response to the emerging competitors in this market. However, the threat of regulation is also likely to have influenced Telecom's pricing.
147. The incentives for retail customers to switch to other providers may also be diminished, particularly in respect of Telecom's commercial UBS offering, given the application of the UBS churn fee. This may be of particular significance in a market demonstrating the growth rates recently experienced in relation to broadband services in New Zealand.
148. Given the barriers to entry and expansion that remain for fixed network operators, and the limitations of FWA technology, competition in the wholesale broadband access market has not developed sufficiently to enable the Commission to conclude that there is no longer limited competition in this market.

**Markets and competition assessment conclusion**

149. The market relevant to this Application is a national wholesale market for the provision of broadband access.
150. The Commission considers that Telecom faces limited competition in that market.

**Question 4: Comment is sought on the preliminary assessment of competition in the defined market, in particular in relation to the competition criteria listed above.**

## APPLICATION OF THE INITIAL PRICING PRINCIPLES

151. This section sets out the Commission's view on the calculation of initial prices for the bitstream access service.
152. The Initial Pricing Principle ('IPP') for bitstream access, set out in Schedule 1, Part 2 of the Act, is:
- either:
- a. retail price (as imputed by the Commission having regard to any comparable service) less a discount benchmarked against discounts in comparable countries that apply the retail price minus avoided costs saved pricing in respect of the service, in a case where Telecom faces limited, or is likely to face lessened competition in a market for that service; or
  - b. retail price (as imputed by the Commission having regard to any comparable service) less a discount benchmarked against discounts in comparable countries that apply the retail price minus actual costs saved pricing in respect of the service, in a case where Telecom does not face limited, or lessened competition for that service.
153. As discussed in the previous section, the Commission considers that Telecom faces limited competition in the national wholesale market for the provision of broadband access. For this reason, the relevant IPP for bitstream access is retail price minus avoided costs saved.
154. The calculation of an initial price for bitstream access has two components. Firstly, the Commission is required to impute a retail price having regard to any comparable service, and secondly, the Commission is required to deduct a discount benchmarked against other jurisdictions that apply an avoided costs saved methodology.
155. On 18 January 2005, the Commission provided the parties with one possible methodology and sought comment on that approach in cross submissions.<sup>55</sup> This approach was:

### *Imputation of the retail price*

1. Consider Telecom Jetstream residential and business retail prices as comparable services;
2. Impute stand-alone Jetstream retail prices from Jetstream packages using the imputation methodology set out in the designated service 'Retail services offered by means of Telecom's fixed telecommunications network as part of bundle of retail services';
3. Deduct ISP charges from relevant Jetstream retail prices;
4. Deduct the data transmission charges from the Jetstream services for business and residential Jetstream retail offerings separately, using the data cap as the independent variable and the monthly retail price as the dependent variable to remove effects of transport. (The cost of providing Jetstream is assumed to be independent of download and upload speeds); and
5. Using the two access prices (business and residential), calculate a single weighted price for bitstream access using current Telecom residential and business broadband users to weight into one price

### *Removal of avoided costs saved*

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<sup>55</sup> Letter from the Commission (Borthwick) to Telecom (Parkes) & TelstraClear (Forsyth), 18 January 2005

6. Deduct the avoided costs saved, using previous benchmarked avoided costs saved reports as set out in Decisions 497 and 525, updated where regulated prices has changed.

### *Retail Price Imputation*

156. It is necessary to impute a retail price as there is no direct retail equivalent of the bitstream access service. Bitstream access is a means of providing a competitor with a data stream capable of supporting a variety of retail services. At the present time, the retail service most likely to be supplied is broadband internet access though other uses may be found by access seekers.
157. The Commission, accordingly, considers that the basis for the imputation of a retail price should be the retail prices of Telecom's Jetstream ADSL services. Though other broadband internet access services are available in the market from other suppliers, the application of the IPP and the removal of costs attributable to retailing the service implies that only Telecom's retail prices are relevant. In addition, bitstream access is supplied over the same network access infrastructure that Telecom uses to provide its Jetstream services.

### Independence of speed from access cost

158. TelstraClear submits that only Jetstream services with an upchannel speed of 128kbps should be considered as comparable services. Alternatively, TelstraClear submit that retail pricing of Jetstream services with higher upstream channels will require adjustment to impute a price which is comparable with the bitstream access service.<sup>56</sup>
159. The Commission understands that the cost of supply of a bitstream access circuit is not materially affected by the downstream and upstream speeds provided on an individual circuit due to the configuration of Telecom's access network, including aggregation between the DSLAM and the first ATM switch. Accordingly, in imputing the retail prices, the Commission has considered all Jetstream services, including those with downstream and upstream speeds different from that requested in the Application.

### Price discrimination between Residential and Business end-users

160. In reference to the Commission's suggested approach to calculation of the imputed retail price for bitstream access, Telecom 'strongly disagrees with a highly averaged approach'.<sup>57</sup> Telecom is of the view that there must be an imputed retail price for each wholesale bitstream service intended to be regulated<sup>58</sup>. Telecom submits that 'a single weighted price for business and residential users would not advance the policy objects that led to the designation of the wholesale bitstream service, nor would it be consistent with the objective of increasing broadband uptake. On other occasions, the Commission has recognised the welfare enhancing effects of price discrimination and Telecom considers it is surprising that, in the critical areas of broadband delivery, the

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<sup>56</sup> TelstraClear cross submission, 28 January 2005, pp. 50 – 51.

<sup>57</sup> TCNZ Cross Submission Para 116.

<sup>58</sup> TCNZ Cross Submission Para 114.

Commission would consider introducing a pricing policy that made price discrimination infeasible.<sup>59</sup>

161. TelstraClear submits that ‘averaging the imputed business and residential retail prices to produce a wholesale price will skew the competitive focus to SME customers, whereas the Commission recognized in its Unbundling Report that broadband penetration amongst residential customers was especially poor. If the Telecom residential and business Jetstream services are technically equivalent, any differentiated downstream retail pricing by Telecom between customer segments reflects Telecom’s retail pricing strategy, which should not influence wholesale pricing for its competitors.’<sup>60</sup>
162. The Commission disagrees that, for the purposes of calculating the bitstream access imputed retail price, there should be an imputed retail price for each variant of Telecom’s own Jetstream service. Such an approach is likely to hinder the ability of a wholesale customer to differentiate its broadband services from Telecom by reinforcing Telecom’s chosen price structure.
163. The Commission considers that a significant benefit of bitstream access, which differentiates the service from the resale of Telecom’s existing Jetstream offerings, is the ability of access seekers to differentiate their services and hence pricing. Applying different speed plans, data usage allowances, levels of customer service and allowing for different end-user profiling dependent on the applied use of the bitstream service is most likely to promote competition for the long-term benefit of end-users.
164. The Commission accepts the position of the parties that a separate bitstream access price is appropriate for residential and business customers. The Commission is satisfied that separate bitstream access prices for ultimate supply to residential and business end users who purchase broadband services from access seekers using the bitstream access as a wholesale input is unlikely to hinder materially service innovation or prevent further price discrimination of end-user services.

### Current Pricing

165. The relevant Residential Xtra Jetstream services effective from 24 October 2004 are:<sup>61</sup>

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<sup>59</sup> Telecom cross submission, 28 January 2005, p. 6.

<sup>60</sup> TelstraClear cross submission, 28 January 2005, p. 8.

<sup>61</sup> Telecom website, <http://www.telecom.co.nz/chm/0,5123,203071-202543,00.html>.

**Table 3: Xtra Residential Jetstream Services<sup>62</sup>**

<b>Plan name</b>	<b>Speed (down/up)</b>	<b>GByte allowance</b>	<b>Monthly Price (GST exclusive)</b>	<b>Excess usage (\$/MByte)</b>
Xtra Jetstream Go	256/128 kbps	1GB	\$44.40	Throttle on cap
Xtra Jetstream Discover	1M/128 kbps	1GB	\$48.84	Throttle on cap
Xtra Jetstream Explorer	256/128 kbps	3GB	\$53.29	Throttle on cap
Xtra Jetstream Adventure	2M/128 kbps	10GB	\$71.07	Throttle on cap
Xtra Jetstream Navigate	2M/128 kbps	10 GB	\$71.07	\$0.02

166. The relevant Business Jetstream services offered are:<sup>63</sup>

**Table 4: Xtra Business Jetstream services**

<b>Plan name</b>	<b>Speed (down/up)</b>	<b>GByte allowance</b>	<b>Monthly Fee (GST exclusive)</b>	<b>Excess usage (\$/MByte)</b>
Xtra Jetstream Venture 1GB	256/128 kbps	1GB	\$59.95	4.44c
Xtra Jetstream Venture 3GB	256/128 kbps	3GB	\$79.95	4.44c
Xtra Jetstream Venture Flat Rate	256/128 kbps	Unlimited	\$99.95	n/a (Download speed may be reduced to a maximum of 64 kbs once 10GB is reached)
Xtra Jetstream 600	2-8Mbps/600kbps	600MB	\$79.11	18c
Xtra Jetstream 1200	2-8Mbps/600kbps	1200MB	\$137.78	17c
Xtra Jetstream 1800	2-8Mbps/600kbps	1800MB	\$193.78	16c
Xtra Jetstream 3000	2-8Mbps/600kbps	3000MB	\$309.78	14.3c
Xtra Jetstream	2-8Mbps/600kbps	5000MB	\$475.78	12.5c

<sup>62</sup> For consistency, the Commission has considered all relevant Jetstream services on a GST exclusive basis.

<sup>63</sup> Telecom website, <http://www.telecom.co.nz/chm/0,5123,200345-201334,00.html>.

5000				
Xtra Jetstream 10000	2-8Mbps/600kbps	10000MB	\$905.78	10.7c
Xtra Jetstream 20000	2-8Mbps/600kbps	20000MB	\$1617.78	9c
Xtra Jetstream 30000	2-8Mbps/600kbps	30000MB	\$2417.78	9c

167. The Commission's view is that the imputation of the comparable retail prices listed above requires the following amendments.

#### Removal of Internet Service Provider (ISP) charges

168. Telecom's Jetstream prices listed above include an ISP charge for Xtra. As access seekers will provide their own ISP services, this charge should be removed.
169. TelstraClear agrees with the Commission's position on this issue. TelstraClear submitted the discount for the ISP charge may be higher as TelstraClear does not believe that the discount fully reflects the costs and value of an internet service, and proposes a greater proportion of the total price of the Telecom Jetstream service be discounted when imputing the retail price of the service. Telecom agrees that an appropriate deduction from each base retail price should be made to reflect the ISP based component of that base retail price. The Commission notes however that other ISPs have matched the Xtra pricing.
170. The differential in residential retail prices including and excluding the ISP fee is \$10 (GST inclusive) across all speed variants<sup>64</sup>. Accordingly, for residential services, \$8.89 (GST exclusive) should be removed from the relevant Jetstream price.
171. For business customers, the differential in retail prices including and excluding the ISP differs by speed between \$8.89 (GST exclusive) for Xtra Jetstream Venture 1GB and \$17.78 (GST exclusive) for Xtra Jetstream 30000.

#### Calling Discount

172. The Jetstream residential pricing structure includes differential pricing depending upon whether the customer purchases calling services from Telecom. Telecom argues that this structure constitutes a 'bundle' for the purposes of the Act.
173. Telecom submits the proposed methodology should not be accepted in its current context, as unbundled products exist for Jetstream<sup>65</sup>. TelstraClear agreed with the Commission's suggested approach to the proposed tolls discount section of the IPP methodology.<sup>66</sup>

<sup>64</sup> Telecom Wholesale Informer, *Jetstream Changes*, 24 September 2004.

<sup>65</sup> TCNZ Cross Submission paragraph 121.

<sup>66</sup> TCL Cross Submission Paragraph 126.

174. Possible guidance as to an approach to the imputation of a retail price where services are provided in a bundle is provided by the designated service known as ‘Retail services offered by means of Telecom’s fixed telecommunications network as part of a bundle of retail services’. This service requires that:

The imputed retail price must –

- (a) be based on the observed discount of the bundle relative to the total price of the services offered separately; and
  - (b) take account of any price difference that arises from the lower cost of providing the services as a bundle, the lower cost of quantity supply, any difference in the cost of providing the services between different markets, and any other difference in costs
175. Telecom currently offers two prices (which differ by a \$10 GST inclusive discount) for each residential Jetstream service purchased. The lower price is dependent on whether the residential end-user purchases calling services from Telecom in conjunction with Jetstream.
176. The Commission sought information from Telecom to ascertain the level of calling spend where Telecom Jetstream customers also obtained calling services from Telecom. Telecom supplied the average calling spend for its customers who purchased Jetstream and also had their homeline and calling with Telecom. The monthly average for December 2004, January and February 2005 is [ ]CRI exclusive GST.<sup>67</sup>
177. For example, with the residential Jetstream plan Xtra Jetstream Go, the input price for the imputation is calculated as follows:
- Step 1: Retail list price is \$44.40 excl GST
  - Step 2: Deduct ISP charge of \$8.89 from the retail list price
  - Step 3: Calculate the percentage of cost of Jetstream in the package where the customer has purchased Telecom Homeline and Calling based on the average toll spend per end customer.
  - Step 4: Deduct the percentage discount attributable to Jetstream when purchasing Telecom Homeline and Calling in conjunction with Jetstream
178. The Commission considers that the ISP charge should not form part of the price of Jetstream for the purposes of calculating the discount apportioned to Jetstream. For resold Jetstream services there is an ISP charge, but this varies between ISP’s and is a separate factor of the overall price and is independent of where the end user purchases Calling. Furthermore inclusion of the ISP charge when calculating the percentage of Jetstream in a package where the end user has opted to purchase Calling from Telecom will lead to double counting of the discount as this is already accounted for in the imputed retail price.
179. The Commission considers that the proportion of the average monthly charges for Jetstream and Calling is likely to reflect the proportion attributable to each service of the Calling discount when Jetstream and Calling are purchased jointly through Telecom.

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<sup>67</sup> Letter from Telecom (Knight) to the Commission (Webb), 5 April 2005.

180. In reaching this finding, the Commission is not required to decide whether Jetstream and Calling is a bundle.
181. Accordingly, the Commission considers that the relevant input retail price to be used as a basis for the bitstream access pricing principle should be the price of Jetstream less a proportion of the Calling discount for the bitstream access price for residential users.

#### Other costs

182. The costs of modems, routers and installation have been omitted from the imputation calculation. These are currently recovered separately from the retail price, although from time to time, Telecom does offer free installation and modems. However, for the purposes of the IPP, the Commission has not made further allowance for the effect of such offers on the retail price. Were such consideration made, it may be necessary to amortise such cost over the useable life of the equipment or connection.

#### National and International Transmission

183. The Jetstream retail prices include charges for national and international transmission. To impute the price for bitstream access alone, the Commission considers that the cost of transmission beyond the first ATM must be removed from the retail price. Aggregated traffic charges are those attributed to the quantity of data sent both downstream and upstream to the end-user. An access seeker using a bitstream access circuit would need to provide its own transmission services.

#### Proposed methodology to remove transmission

184. The method of removing transmission charges is to strip the adjusted retail price of the traffic component associated with transmission to find an access price for access to the comparable service independent of any downstream speed characteristics.
185. To reflect the costs associated with traffic, the Commission used linear regression analysis by taking the adjusted monthly line rental excl GST as the dependent variable and the Data Cap/Usage allowance as the independent variable to assess the bitstream access price alone.
186. Telecom's view is that using data caps as an independent variable would not give a meaningful result<sup>68</sup> because there are some plans which continue at slower speeds after their data cap is reached, and some that continue at a higher speed but charge separately for the amount of data that is downloaded. Telecom also notes that it plans to charge a speed premium to the 2Mbps UBS plan it will be offering over the reference 256kbps service price.<sup>69</sup>

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<sup>68</sup> TCNZ Cross Submission Paragraph 130.

<sup>69</sup> TCNZ Cross Submission Paragraph 134.

187. TelstraClear endorsed the approach taken by the Commission<sup>70</sup> to back out costs attributed to national and international capacity not included in the bitstream access price. TelstraClear also submitted that data usage caps also may have a greater influence on retail price than the downstream speed.<sup>71</sup>
188. The Commission considers that the y-intercept should be the monthly price excl GST for bitstream access, which is independent of any costs associated with transmission of data.
189. Five Telecom Jetstream retail plans were used as inputs in the linear regression graph by the Commission:

Retail Plan	Jetstream Retail List Price (\$) <sup>72</sup>	List price less Telecom ISP charge (\$) <sup>73</sup>	Monthly Adjusted retail price (\$)	Data Cap (Mb)
Xtra Jetstream Go	44.40	35.51	[ ] CRI	1
Xtra Jetstream Discover	48.84	39.96	[ ] CRI	1
Xtra Jetstream Explorer	53.29	44.40	[ ] CRI	3
Xtra Jetstream Adventure	71.07	62.18	[ ] CRI	10
Xtra Jetstream Navigate	71.07	62.18	[ ] CRI	10

190. Inputting the monthly adjusted price into the linear regression gives a y-intercept of \$31.187 excl GST which the Commission believes is the cost of access alone per month for the comparable Telecom residential Jetstream service.

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<sup>70</sup> TCL Cross Submission Paragraph 129.

<sup>71</sup> TCL Cross Submission Paragraph 131.

<sup>72</sup> All prices in this table are excluding GST.

<sup>73</sup> This price is obtained by deducting the Telecom ISP charge of \$8.88 excl GST from the retail list price.

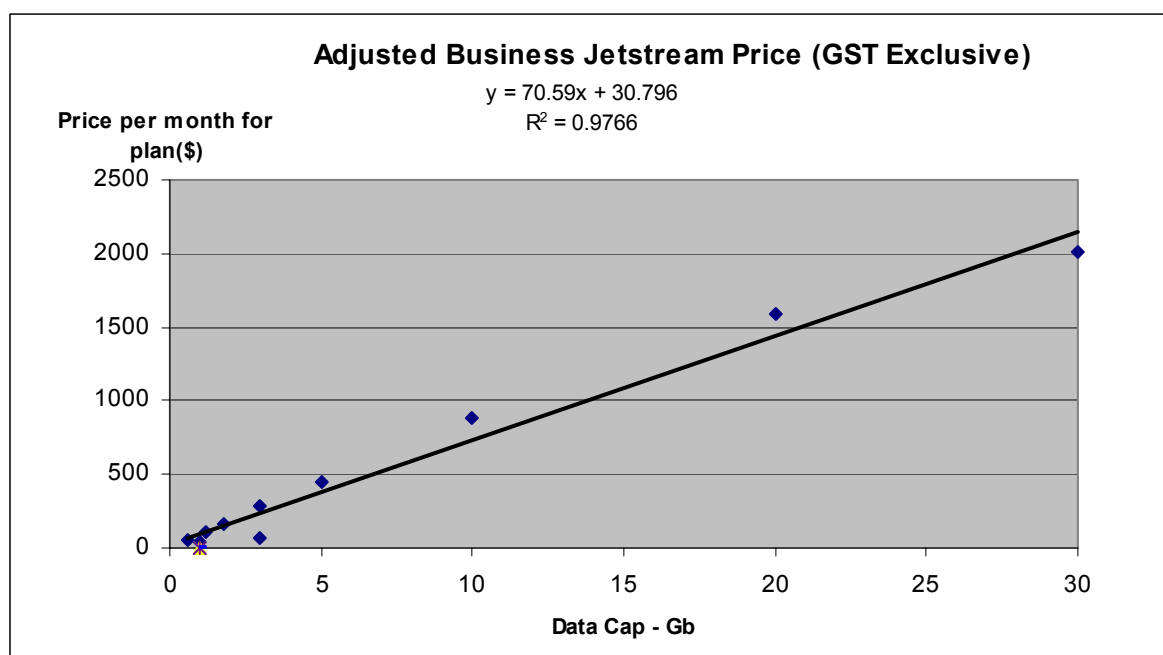
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191. A similar process must then be undertaken to find the cost of access for comparable Telecom business Jetstream services.
192. Business prices differ from residential prices in that they do not have a Calling discount included, but do include an ISP charge, and as such this is reflected in the input prices used in finding the cost of access alone for the business component of the imputed retail price.

Telecom Retail Jetstream Business Plan <sup>74</sup>	Data Cap (Megabytes)	Monthly Adjusted retail price excluding GST (\$)
Venture 1 GB	1	42.17
Venture 3 GB	3	62.17
Jet 600	.6	52.44
Jet 1200	1.2	111.11
Jet 1800	1.8	167.11
Jet 3000	3	283.11
Jet 5000	3	449.11
Jet 10000	10	879.11
Jet 20000	20	1591.11
Jet 30000	30	2007.11

193. Feeding these numbers in with the independent variable the data cap and the dependent variable the monthly adjusted retail price excl GST, this provides a y-intercept of \$30.796 excl GST.

<sup>74</sup> Xtra Jetstream Venture Flat Rate was omitted for the sake of consistency in that this plan has different characteristics to the other Jetstream business retail plans with respect to application of data caps. The services must be comparable in their sub categories to maintain consistency.



The value of \$30.796 is taken to be the monthly cost of access alone for a business end-user

### Price changes over time

194. As this is a static analysis using Telecom's current prices, the Commission considers that these bitstream access prices should be readjusted following any change to Telecom's retail Jetstream charges during the life of the determination. Such an approach would be consistent with the approach taken in Decisions 497 and 525 where the DSPL is calculated on a quarterly basis. This will ensure that any changes in price over the duration of the determination are also passed through to the bitstream access price.

### **Benchmarking Avoided Costs Saved**

195. Following imputation of the retail prices to determine the bitstream access charge, the IPP requires that a deduction is made for the benchmarked costs that an access provider avoids by providing a service at wholesale rather than retail. Avoided costs saved is defined as:

the difference in the access provider's costs between supplying the service on a wholesale basis only and supplying the service on both a wholesale and retail basis, including a share of the retail-specific costs

196. Telecom agrees that a deduction of some nature is required and would not oppose the use of the 16% discount derived from previous benchmarking.<sup>75</sup> TelstraClear considers that discount to be too conservative<sup>76</sup> for the avoided costs saved component.

<sup>75</sup> TCNZ Cross Submission Paragraph 154

<sup>76</sup> TCL Cross Submission Paragraph 141

197. As the Commission's proposed imputation price methodology removes the avoided network elements such as national backhaul and international bandwidth, the Commission does not consider that it is necessary to further consider such costs when assessing the avoided costs saved between provision of wholesale and retail.
198. The Commission undertook previous benchmarking studies of the retail avoided costs saved by providing services at wholesale. The Commission takes the same approach as in Decision 497 and Decision 525, and therefore has applied the same discount rate for avoided costs saved of 16%, subject to data updating.
199. The Commission considers that a discount of 16% must be deducted from the imputed retail prices. The benchmarking study is provided in Appendix B.

#### **Initial Price payable for Bitstream Access – Residential**

200. The Commission requires Telecom to make the bitstream access service available to TelstraClear as an input for residential users at the following price:

Imputed Retail Price	\$31.187
less Benchmarked Avoided Costs Saved (16%)	<u>(\$4.98)</u>
<b>Bitstream Access Price</b>	<b>\$26.19<sup>77</sup></b>

#### **Initial Price payable for Bitstream Access – Business**

201. The Commission requires Telecom to make the bitstream access service available to TelstraClear as an input for business users at the following price:

Imputed Retail Price	\$30.796
less Benchmarked Avoided Costs Saved (16%)	<u>(\$4.92)</u>
<b>Bitstream Access Price</b>	<b>\$25.87</b>

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<sup>77</sup> For the purposes of simplicity, figures were displayed to two decimal places. Performance of calculations applied 4 decimal places and yield a lower Bitstream Access Price.

## SUNDRY CHARGES RELATING TO SUPPLY OF BITSTREAM ACCESS

202. The Application requests that the Commission determine other charges relating to the provision of the bitstream service, including reassignment charges (also known as ‘churn fees’), new connections and Moves Adds and Changes (‘MACs’).

### *Reassignment charges*

203. Telecom charges users of its commercial UBS service a one-off charge to transfer an existing Telecom retail Jetstream customer to a wholesale broadband service provided by that access seeker.
204. TelstraClear suggest reassignment charges be set on a cost-based approach,<sup>78</sup> and should recoup only Telecom’s incremental costs (excluding system set-up costs) of processing the reassignment. Telecom is of the view these charges should be based on retail minus approach.<sup>79</sup>
205. The Commission considers that Telecom should be entitled to recover those costs that it efficiently incurs as a result of transferring customers from retail to wholesale provision.
206. A reassignment charge that does not reflect efficient transfer costs risks sending inappropriate signals to end-users. If the reassignment charge is set too high, an end-user may be deterred from churning where it would be efficient for them to do so. Conversely, a reassignment charge set too low may promote inefficient churning by customers between broadband services. If the reassignment charge is absorbed by the access seeker, an inefficiently high charge will raise the access seeker’s marginal costs and thereby deter competition by an access seeker that is equally or more efficient than Telecom.
207. Telecom’s commercial UBS User Guide<sup>80</sup> sets out the following charges in respect to the churn fee:

The churn fee is aligned to the cost of standard connection charge (currently \$88 + GST) plus reassignment fee (\$13.75 for residential and \$17.50 for business):

Residential:	$\$88.00 + \$13.75 = \$101.75 + \text{GST}$
Business:	$\$88.00 + \$17.50 = \$105.50 + \text{GST}$

The fee will apply for all provisions of UBS pertaining to lines where an ADSL connection has been operational within the last 30 days.

208. The Commission obtained from Telecom its view of the cost, on a TSLRIC basis,<sup>81</sup> that Telecom incurs, or would incur, to transfer an end-user between a retail service and a wholesale service in the following scenarios:

<sup>78</sup> TCL Cross Submission Paragraph 150

<sup>79</sup> Reference?

<sup>80</sup> See Telecom User Guide, March 2005, <http://www.telecom.co.nz/binarys/user-guide-ubs.pdf>

- (a) An end-user supplied by Telecom with a retail Jetstream service chooses instead to subscribe to a retail ADSL service provided using a wholesale bitstream service supplied by Telecom to TelstraClear;
- (b) An end-user resupplied with a Telecom wholesale Jetstream service by TelstraClear or another reseller chooses instead to subscribe to a retail ADSL service provided using a wholesale bitstream service supplied by Telecom to TelstraClear; and
- (c) An end-user supplied by another access seeker with an ADSL service provided using a Telecom wholesale bitstream service chooses instead to subscribe to a retail ADSL service provided using a wholesale bitstream service supplied by Telecom to TelstraClear.

209. Telecom undertook a top-down estimate and noted that  
[ ]TCNZRI.<sup>82</sup> Telecom considered that the costs did not materially differ between the scenarios.
210. Telecom estimate this incremental cost to be [ ]TCNZRI per transaction.  
[ ]TCNZRI  
Telecom added a [ ]TCNZRI mark-up on this incremental cost,<sup>83</sup> in order to provide a contribution to common costs (such as IT and accommodation costs). This results in an estimated cost of \$36.42 per transaction.
211. As noted above, the Commission considers that Telecom should be entitled to recover those costs that it efficiently incurs as a result of transferring customers from retail to wholesale provision. This is equivalent to the incremental costs Telecom incurs in respect of customer transfers. The Commission does not consider that Telecom should recover a common cost mark-up on the incremental cost of reassigning a customer. Telecom incurs those common costs because of its wider wholesaling activities. These costs are not likely to be variable within the term of this determination.
212. The Commission accordingly considers that the reassignment charge should be set at an efficient price level and notes that this will not, in any event, be greater than [ ]TCNZRI per transaction.
213. The Commission expects that with this guidance, the parties will be able to agree on the level of the transaction charge to apply between them. Should the parties fail to reach such an agreement within 30 days of the date of the final determination, either party may request the Commission to set that charge.

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<sup>81</sup> For the purposes of assessing incremental cost, the Commission required that the following assumptions be made: (a) the relevant exchange is ADSL enabled; (b) the DSLAM is configured to supply both retail and wholesale ADSL services; and (c) the DSLAM is configured to supply bitstream service to multiple access seekers.

<sup>82</sup> Telecom, *Response to Notice dated 1 March 2005 under section 98(a) of the Commerce Act relating to TelstraClear's application for a determination in respect of the regulated services of (i) access to, and interconnection with, Telecom's fixed PDN, and (ii) Telecom's fixed PDN backhaul, contained in Schedule 1 of the Telecommunications Act 2001*, 7 April 2005

<sup>83</sup> [ ]TCNZRI

*New Connections*

214. The Commission accepts that there are costs associated with providing a new connection at network level for a new end-user at the retail level, and that these costs also occur for the connection of a new end user to the bitstream service who does not have a current connection.
215. TelstraClear submits new connections should be provided on a retail minus avoided costs saved approach, due to comparable services being available in the retail market<sup>84</sup>. Telecom appears to consider that new connections are retail costs not conceptually different to advertising or in store displays.<sup>85</sup>
216. The Commission considers that where new connection charges arise for the connection of a retail customer, and to the extent that those functions also occur in provisioning a new wholesale bitstream customer, Telecom is entitled to charge TelstraClear a new connection charge calculated by deducting from the standard new connection charge the avoided costs saved discount of 16%.

*Moves, Adds, and Changes ('MACs')*

217. TelstraClear request that charges for MACs be based on Telecom's incremental costs (excluding system set-up costs).<sup>86</sup> Telecom argues that as it has retail MAC charges in relation to retail Jetstream, which are charged at the same rate as new connections, a retail minus approach should be taken to setting a wholesale MAC charge.<sup>87</sup>
218. Telecom charges retail customers to move a Jetstream connection between premises.<sup>88</sup> There is no charge to switch to alternative Jetstream plans.<sup>89</sup> The Commission is unaware of any other retail MAC charges for Jetstream customers.
219. The Commission considers that Telecom is entitled to recover from TelstraClear the retail charge for moving premises, less a discount reflecting the avoided costs saved of 16%, where a wholesale customer moves ADSL connection between premises.

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<sup>84</sup> TCL Cross Submission Paragraph 146

<sup>85</sup> TCNZ Cross Submission Paragraph 168

<sup>86</sup> TCL Cross Submission Paragraph 151

<sup>87</sup> TCNZ Cross Submission Paragraph 173

<sup>88</sup> <http://www.telecom.co.nz/chm/0,5123,200356-200550,00.html>

<sup>89</sup> <http://www.telecom.co.nz/chm/0,5123,204211-203349,00.html>

## NON-PRICE TERMS - BITSTREAM SERVICE

### Speed configuration

220. The Application requests that:

- (b) Telecom should not apply rate shaping to the Wholesale bitstream service unless otherwise required by TelstraClear in accordance with this paragraph. TelstraClear should be able to choose between two configurations when ordering a wholesale bitstream service:
- (i) a wholesale bitstream service to the maximum speed of which the relevant DSLAM is capable without any rate shaping by Telecom. TelstraClear may undertake rate shaping of the wholesale bitstream service to configure the combination of upstream and downstream speeds it considers appropriate for its downstream ADSL services; or
  - (ii) a wholesale bitstream service which Telecom rate shapes to the configuration of upstream and downstream speeds nominated by TelstraClear, provided that the speeds are consistent with the “limitations on access principles” prescribed in the bitstream designated service and do not exceed the maximum speed of which the relevant DSLAM is capable. Without limiting this requirement, the rateshaping options to be initially made available by Telecom should include:<sup>90</sup>

Downstream	Upstream
256 kbps	128 kbps
512 kbps	128 kbps
1 Mbps	128 kbps
2 Mbps	128 kbps
8 Mbps	128 kbps

221. TelstraClear notes that (b)(ii) above ‘is intended as a fallback if the Commission rejects TelstraClear’s request for unrate-shaped service and these are speed combinations of services TelstraClear proposes Telecom should be required to supply’.<sup>91</sup> The five specific speed variants detailed in (b)(ii) above have specific download speeds between 256 kbps and 8 Mbps, with all variants having an upstream speed of 128kbps.<sup>92</sup>

222. Telecom submits that the request for non rate-shaped bitstream access is outside the jurisdiction of the designated service in the Act, as Telecom considers it would result in a service with an upstream speed faster than the limits on access principles of the designated service.<sup>93</sup> Telecom adds that the provision of a non rate-shaped service with an unlimited downstream capacity would render such a service unstable.<sup>94</sup> TelstraClear subsequently clarified that it ‘is not seeking to revisit or circumvent the 128 kbps upchannel limitation’.<sup>95</sup>

<sup>90</sup> TelstraClear UBS Application, 4 November 2004, paragraph. 16.2, pp. 6 - 7

<sup>91</sup> TelstraClear cross submission, Appendix B, p. 76

<sup>92</sup> *ibid*, para 16.2(b)(ii), p. 6

<sup>93</sup> Telecom submission, 16 December, p. 36

<sup>94</sup> see Telecom Submission, 16 December 2004, p. 36, & Appendix A, p. 50

<sup>95</sup> TelstraClear cross submission, 28 January 2005, p. 4

223. Telecom notes that if TelstraClear's application means that it only requires Telecom to provide the combinations of upstream and downstream speeds which Telecom offers at retail, 'this is acceptable to Telecom, provided that the upstream/downstream speed configuration is consistent with the limits on access principles and that Telecom is not required to provide the service on terms that are more onerous than those on which the relevant retail product is provided'.<sup>96</sup>
224. Telecom submits that the needs of the developing broadband market, and therefore the objectives of the LLU Report, will be best met by it providing bitstream products which are:<sup>97</sup>
- available at a range of download speeds;
  - referenced to comparable Jetstream products in terms of functionality;
  - referenced to comparable Jetstream products in terms of price;
  - differentiated according to the market segment served;
  - provided on terms that are consistent with how Jetstream is provided by Telecom to itself; and
  - within the terms of the designated service.
225. The Commission disagrees that such a prescriptive relationship between the bitstream access service and Telecom's Jetstream product is desirable. The ability of an access seeker to differentiate its own retail offering from the Jetstream range, is fundamental to the promotion of competition through innovation and differentiation in the supply of broadband.
226. The Commission is satisfied that a bitstream service with a non rate-shaped downstream speed, and an upstream speed limited to 128kbps, as requested by TelstraClear, falls within the designated bitstream access service description.<sup>98</sup>
227. The result will be that TelstraClear will obtain a bitstream access service to the maximum downstream speed of which the relevant DSLAM is capable. Accordingly, the Commission does not consider it necessary to require access to the other downstream/upstream speed variations specified in paragraph 16.2 of the Application. TelstraClear may use the 'raw' bitstream to perform rate-shaping to provide the variants of downstream speed it requires.
228. The Commission directs that Telecom should apply rate-shaping to the bitstream service in respect to the upstream speed of 128kbps only. Telecom may not apply rate-shaping to the downstream speed, as the bitstream access service should be provided to the maximum capacity of each DSLAM.
229. Telecom states that ADSL technology is, at present, only capable of providing a maximum downstream speed profile of approximately 7.6 mbps, and that the maximum speed profile could only be achieved by less than 20% of the end-users in close proximity to the exchange.<sup>99</sup> TelstraClear accepts that the provision of a

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<sup>96</sup> Telecom submission, 16 December 2004, Appendix A, p. 53

<sup>97</sup> Telecom cross submission, 28 January 2005, p. 4

<sup>98</sup> This view is also consistent with earlier statements that the regulated service includes all downstream speed variants capable of being supported by the network. Refer to Commerce Commission, Statement on Unbundled Bitstream Service, 10 September 2004

<sup>99</sup> Telecom Submission, 16 December 2004, p. 52

maximum speed profile can only be achieved by a small number of users in close proximity to the exchange, and accepts that this trade-off is a matter between an access seeker and its own customer.<sup>100</sup>

230. Telecom also submits that the implementation of speed configurations different from those currently offered at retail is complex and costly. There are also significant operational issues associated with having multiple downstream and upstream configurations and quality characteristics that need to be supported by the network for individual customers.<sup>101</sup> These concerns are no longer relevant given the Commission's decision to require a non rate-shaped downstream service.
231. Telecom further submits that the provision of a non rate-shaped service with an unlimited downstream capacity would render such a service unstable.<sup>102</sup> Telecom has not however provided any justification for this claim, and the Commission therefore gives no weight to it.

**Question 5: What are the potential instability risks that might arise from the provision of a bitstream access service with unlimited downstream speed to the maximum technical capacity of the DSLAM, and a 128kbps upstream speed?**

**Question 6: Would the nature of that service described above effect the provision of data streams on the network at OSI layer 2?**

### **Request for service equivalence**

232. The Application requests access to bitstream services with specific technical service parameters including latency, jitter, and contention ratios. Telecom submitted that such specific technical service parameter requests would result in the provision of a near real-time service, which would be inconsistent with the access principle limitation that the designated service is not required to support any function that relies on real time network capability.<sup>103</sup>
233. Telecom submitted that there are significant issues as to whether it is reasonably technically and operationally practicable for Telecom to provide a number of the non-price terms requested by TelstraClear.<sup>104</sup>
234. At the Commission's workshop on 11 February, TelstraClear noted that it sought equivalency of network service parameters with Telecom's own Jetstream services.<sup>105</sup>

The first thing with regard to equivalence, is that we are seeking equivalence and evidence of that equivalence on the underlying network service used to support Telecom's DSL/ex-DSL based service, most usually thought of today as Jetstream.

<sup>100</sup> TelstraClear cross submission, Appendix B, p. 77

<sup>101</sup> Telecom Submission, 16 December 2004, p. 52

<sup>102</sup> see Telecom Submission, 16 December 2004, p. 36, & Appendix A, p. 50

<sup>103</sup> see TelstraClear's Application, Annex 1, para. 1.1, Table 1.

<sup>104</sup> See Telecom Submission, 16 December 2004, p 39

<sup>105</sup> UBS technical workshop transcript, 11 February 2005, pp. 82 - 83

And so, that's, I guess, the first technical objective that we have been seeking and what we have asked for is that in evidencing that, that Telecom records and reports that the level of quality that they provide on a network basis to deliver their retail service is the same level of quality that they deliver to us as a wholesale customer.

The second point with regard to why we have suggested the measuring of the parameters - well firstly, why have we asked for parameters because maybe if we left our requirement as I've just stated it, then regardless of what the quality of service is that Telecom operates its network by, as long as we get the same, and it's demonstrated to be the same by reporting and measuring, as long as we get the same performance as that underpinning say Jetstream then we should be happy.

235. This was further clarified in a letter to the Commission dated 18 February 2005.<sup>106</sup>

TelstraClear believes that its requests for equivalency and specific service standards line up as follows:

- a. the Commission should set specific service parameters (performance levels) to which Telecom is required to supply the bitstream service;
- b. those service parameters should reflect the levels of service which are consistently or usually achieved on the underlying network supporting the Jetstream service. The service parameters, therefore, should be a measure of the usually expected service levels and not of the minimum performance levels to which Telecom commits or would be prepared to commit to end users in the supply of its retail service; and
- c. Telecom should be required to monitor and periodically report against the serviced parameters for supply of the bitstream service to access seekers and supply of the equivalent component of the network service supporting Jetstream. The service parameters specified in sub-paragraph (a) should be adjusted (up or down) if the service levels for Telecom's equivalent network service differ (allowing for episodic or one off differentials).

236. TelstraClear requests that the Commission require Telecom to provide service parameter equivalence between regulated bitstream access with Telecom's Jetstream service. Specifically, TelstraClear notes that:

... equivalence requires both that the technical services levels achieved on the underlying layer 2 bitstream network service are demonstrated to be the same for wholesale customers and Telecom's retail arm via measuring and reporting and the technical service level parameters are known in advance<sup>107</sup>.... Ex ante specification of network performance levels would enhance opportunities for innovation.

237. Standard access principle 3 requires that for each designated access service, the access provider must provide the service on terms and conditions (excluding price) that are consistent with those terms and conditions on which the access provider provides the service to itself. With regard to bitstream access, this means that there should be no material difference between the network-based characteristics of the bitstream, including latency, jitter and contention ratios, supplied to TelstraClear and the characteristics of the bitstream used by Telecom to supply its own retail services.

238. Telecom argues that Principle 3 cannot be used to require Telecom to provide a service that is clearly better than that which Telecom 'provides to itself' and it should

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<sup>106</sup> Letter from TelstraClear (Forsyth) to the Commission (Borthwick), *Wholesale Bitstream Application*, 18 February 2005

<sup>107</sup> Above note 22.

be read as requiring Telecom to offer wholesale access to essentially the same infrastructure that it uses to provide its retail ADSL services.<sup>108</sup> Telecom indicated that it was difficult to apply Principle 3 to the designated bitstream service as it is not a service which Telecom provides to itself. It also argued that Principle 3 establishes a requirement for the designated access service to be provided on similar, but not identical (or 'equal'), terms and conditions as those on which Telecom provides to itself.<sup>109</sup>

239. Telecom agrees<sup>110</sup> that the underlying network performance of the bitstream service should be consistent with Jetstream, and that the retail customers of access seekers should not experience any difference in non-network service aspects such as fault repair and provisioning.

240. TelstraClear acknowledges<sup>111</sup> that:

It is appropriate to use Telecom's retail supply performance when there are no further steps in the chain of supply beyond Telecom supplying to itself that materially alter the wholesale equivalent input which is being measured. For example, if the packets from wholesale bitstream services and from retail Jetstream services are carried in the same packet stream, which Telecom says will be its approach, the access network performance quality provided to end users and for wholesale customers should be exactly the same. The access network is engineered, as it were, to guarantee equivalence and therefore, non-discrimination is the only possible outcome.

241. TelstraClear submit that 'Telecom should be required to monitor and periodically report against the service parameters for the supply of the bitstream service to access seekers and the supply of equivalent components of the network service supporting Jetstream.'<sup>112</sup>

242. Telecom does not currently offer service levels to Jetstream customers around latency, delay variation, packet loss and the contention ratio to its Jetstream services. Telecom's Jetstream literature notes that:

While we always strive to provide a consistent service, there are a number of factors that influence reliability. For this reason, we do not guarantee bandwidth, latency (delay) or bit rate through our broadband network to Xtra at any one point in time...

Xtra Jetstream is provided with an unspecified bit rate and offers no guaranteed minimum performance. As the Xtra Jetstream service can occasionally go down, we do not recommend Jetstream for 'mission critical' purposes. We cannot guarantee how quickly we can resolve problems with the network.<sup>113</sup>

243. Telecom cited reasons that the Jetstream services have been pitched to provide functional best efforts, internet grade service at an acceptable price for the mass market.<sup>114</sup> Telecom has however, for engineering purposes, a set of design parameters

<sup>108</sup> Telecom's Cross-submission, para 48.

<sup>109</sup> Telecom's Cross-submission, paras 50 and 51.

<sup>110</sup> Letter from Telecom (Parkes) to the Commission, 8 April 2005

<sup>111</sup> Letter from TelstraClear (Forsyth) to the Commission,, 22 March 2005

<sup>112</sup> Letter from TelstraClear (Forsyth) to the Commission (Borthwick), *Wholesale Bitstream Application*, 18 February 2005

<sup>113</sup> Telecom Website, Jetstream Service Reliability, <http://telecom.co.nz/print/0,3903,202924-202537,00.html>

<sup>114</sup> Workshop transcript, 11 February 2005, Dr Milner, p. 72

around latency, delay variation, packet loss and contention ratio for its Jetstream services.<sup>115</sup>

244. The Commission considers that Telecom should be required to provide regular reporting on key service parameters to ensure consistency of service is achieved. Transparency of such information will enable an access seeker to identify whether consistency is being achieved, and enable an access seeker to make informed commercial decisions on the provision of retail services based on accurate information on the underlying network characteristics over which bitstream is supplied.
245. Such an approach is also consistent with Decision 497<sup>116</sup> where the Commission required that Telecom prepare, and have independently audited, Telecom's baseline retail prices ('Designated Services Price List') for the relevant resale services. This approach ensures transparency of standard retail prices, which would otherwise not be visible to an access seeker. Absent this information, an access seeker would be unable to assess whether an access provider is compliant with a determination.
246. The Commission considers that specific service parameters should be measured on Telecom's underlying network at OSI layer 2, common network supporting Telecom's provision of its own layer 3 retail Jetstream service, and bitstream access to wholesale customers at layer 2.
247. The Commission requires that a baseline report on service parameters, in a form approved by the Commission, be provided to TelstraClear and to the Commission within 30 days of the date of the final determination. The Commission also requires that Telecom provide updating reports at quarterly intervals thereafter to both the Commission and TelstraClear.
248. Reports will be subject to an external audit by a suitably qualified organisation on a quarterly basis. The auditor will be agreed between Telecom and TelstraClear or, failing agreement within 30 days of the date of the final determination, will be selected by the Commission. The direct costs of the audit function will be borne equally by Telecom and TelstraClear.
249. Appendix A sets out the service parameters to be measured for the bitstream access service. Service parameters will be monitored based on a representative sample of each network element, DSLAM, ATM Switch and IP Router.
250. TelstraClear submit that the downstream speeds should be measured as follows:<sup>117</sup>
- Throughput measured every minute;
  - The 32kbps minimum should be calculated as a 5 minute average of those 1 minute measurements; and
  - The 256kbps requirement should be calculated as a 60 minute average of those 1 minute measurements.

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<sup>115</sup> Workshop transcript, 11 February 2005, Dr Milner, p. 72

<sup>116</sup> Commerce Commission, *Determination on the TelstraClear Application for Determination for "Wholesale" Designated Access Services*, Decision 497, 12 May 2003

<sup>117</sup> TelstraClear cross submission, 28 January 2005, p. 26

251. Telecom agrees with TelstraClear's proposed sampling methodology, as follows:<sup>118</sup>
- At an agreed number of DSLAMs which provides representative cross section of service environments (e.g. rural and urban). The number of DSLAMs could be up to 50 and could vary depending on service take-up of wholesale services across Telecom's network; and
  - At each of those agreed DSLAMs, by using an agreed number of ADSL connections especially established for testing purposes, rather than actual end-user services. This would provide a controlled environment, use uncongested lines performing to agreed service specifications and allow verification by each party.
252. Telecom notes, however, that significant costs will be incurred in implementing and maintaining such a measurement system, the cost of reporting, and additional personnel costs.<sup>119</sup> The Commission considers such costs should be borne by Telecom. They are in all respects comparable with the onset costs of wholesaling retail services and, for the reasons set out in the Commission's Principle Paper, should be borne by the party incurring them.

**Question 7: Do the suggested criteria appropriately measure the key service parameters necessary to assess whether the network performance of the bitstream service is consistent with the characteristics of the bitstream used by Telecom to supply its Jetstream services?**

**Question 8: Do the parties agree that the ITU definitions for the parameters are the appropriate definitions to use as the basis for measurement of key parameters?**

### *Interleaving*

253. The Application requests that Telecom provide TelstraClear with the option to have interleaving either on or off, at the request of TelstraClear.<sup>120</sup>
254. Interleaving is an algorithm used on a per port basis within a DSLAM for improving the performance of the subscriber level. The purpose of interleaving is to make a connection more reliable and extend the geographic range of ADSL services.
255. Telecom currently has a policy of always having interleaving turned on.<sup>121</sup> Telecom submit that this enables them '... to properly manage noise and interference to the benefit of all users of the copper cable network.'<sup>122</sup> Interleaving enables '...carriers to better manage the noise and interference present on copper cables today. This includes noise like impulse noise, exchange noise from our own exchange equipment, road noise, noise induced from power lines... The noise and interference manifest themselves as packet loss as the signal traverses the copper cable between the customer and the DSLAM.'<sup>123</sup>

<sup>118</sup> Telecom cross submission, 26 January 2005, p. 9

<sup>119</sup> Telecom cross submission, 26 January 2005, p. 9

<sup>120</sup> TelstraClear Application for Determination for Wholesale Services, 4 November 2004,

<sup>121</sup> Workshop transcript, 11 February 2005, Dr Milner, p. 64

<sup>122</sup> Workshop transcript, 11 February 2005, Dr Milner, p. 64

<sup>123</sup> Workshop transcript, 11 February 2005, Dr Milner, p. 62

256. Telecom further submits that turning interleaving off or changing its characteristics with existing ADSL will result in highly unpredictable performance, especially for longer cable reach situations.<sup>124</sup>
257. TelstraClear acknowledges that '[h]aving interleaving off makes a connection less reliable, but has the advantage of lower latency important for gamers and for use in real time applications. Turning off interleaving improves service quality for gaming applications.'<sup>125</sup>
258. TelstraClear submits that the impact of interleaving is greater with the designated bitstream access upstream limitation of 128k. As Telecom has the capability to offer ADSL services with higher speed channels, interleaving at these higher speeds is less of a disadvantage. Accordingly, TelstraClear considers that it would suffer a competitive disadvantage in respect of those customers who have a greater sensitivity to packet delay.<sup>126</sup>
259. TelstraClear notes that '[it] recognises that there is a trade-off which TelstraClear (not Telecom) faces in deciding whether to turn interleaving off: without interleaving, TelstraClear's customers located at distances beyond 4 kms for the Telecom exchange may experience a degree of service degradation.'<sup>127</sup>
260. Telecom submits that '[i]t could not enable TelstraClear to turn off interleaving without conducting extensive trials to assess the implications of this on the particular copper line connecting the end-user to the DSLAM and Telecom's network as a whole.'<sup>128</sup>
261. Interleaving is a setting that is performed on a per port basis. The Commission understands that any consequences, of not having interleaving turned on, will only affect that particular port and will not affect any other port within the DSLAM. If interleaving were turned on for port one and off for port two, and these two copper lines experienced cross talk, then port one would have better performance over port two. The use of interleaving does not stop any cross talk between the copper pairs but instead compensates for it. Additionally, the Commission understands that some vendors' equipment can have multiple values for interleaving (high, medium and low) which produce different latency effects whilst still providing enhanced service quality.
262. TelstraClear acknowledges that switching interleaving off could affect its customer and would be TelstraClear's responsibility; however this choice would not affect other customers.<sup>129</sup>
263. The Commission considers that there is no reasonable technical impediment why TelstraClear's ports could not be individually configured for interleaving. The Commission understands that some carriers internationally have interleaving turned

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<sup>124</sup> Workshop transcript, 11 February 2005, Dr Milner, p. 65

<sup>125</sup> TelstraClear Wholesale Bitstream Submission, 16 December 2004, p. 25

<sup>126</sup> TelstraClear cross submission, 28 January 2005, p. 25

<sup>127</sup> TelstraClear Wholesale Bitstream Submission, 16 December 2004, p. 26

<sup>128</sup> Telecom submission, 16 December 2005, Appendix A, para. 77

<sup>129</sup> Workshop transcript, 11 February 2005, Mr Newberry, p. 69

off and activate it only on ports that have a reduced performance, generally due to distance from the exchange.

264. In addition, while TelstraClear request service equivalency, they are prepared to accept a lesser standard of service for its bitstream access service where such service degradation occurs as a result of latency being turned off.
265. Telecom notes that, while it is technically feasible to turn interleaving off at the DSLAM on a line-by-line basis<sup>130</sup>, it does not currently have an automated capability for provisioning services with interleaving off as an option so there could be considerable cost to implement this option specifically for TelstraClear.<sup>131</sup>
266. The Commission requires that Telecom switch interleaving off for the relevant ports when requested to do so by TelstraClear for a bitstream-supported customer. Should Telecom consider that it will incur incremental costs in supporting this interleaving option, Telecom may request the Commission to approve an efficient charge for that service.

**Question 9: Does Telecom seek to recover the additional costs necessary to turn interleaving off for individual ports?**

*Usage limits on data downloads*

267. TelstraClear submits that there should be no usage limits on data downloads for individual or aggregated wholesale bitstream services.<sup>132</sup> Telecom notes that this request is acceptable to Telecom and notes that it does not impose usage limits on data downloads on its commercial UBS service.<sup>133</sup>
268. The Commission requires that the bitstream service must be provided without any usage limits on data downloads.

*Retail / Wholesale concurrency*

269. TelstraClear requests that ‘if Telecom introduces a new retail Jetstream service which has a combination of upstream/downstream speeds not currently offered by Telecom at the retail level, Telecom should include that combination as a rate shaping option available for the wholesale bitstream service if it does not already do so (provided this new option meets “the limitation on access principles” prescribed in the bitstream designated service).<sup>134</sup> Telecom notes that this matter does not appear to be contentious.<sup>135</sup>

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<sup>130</sup> Workshop transcript, 11 February 2005, Dr Milner, p. 64

<sup>131</sup> Workshop transcript, 11 February 2005, Dr Milner, p. 66

<sup>132</sup> TelstraClear Application, 4 November 2004, para. 16.2(a), p. 6

<sup>133</sup> Telecom Submission, Appendix A, p. 50

<sup>134</sup> TelstraClear Application, 4 November 2004, para. 16.2(c), p. 6

<sup>135</sup> Telecom Submission, para. 158, p. 36

270. This request is no longer necessary given the Commission's decision that TelstraClear should have access to a bitstream access service with a non rate-shaped downstream speed to the maximum technical capacity of the DSLAM. Accordingly, TelstraClear itself is able to shape this service to provide retail variants to its clients which might match Telecom's own Jetstream services speed variations.

### *Operational Support*

271. The Application requests that a phase programme is implemented 'to achieve efficient direct electronic interfaces between [TelstraClear's] operational support systems for the service inquiry, service ordering, provisioning and fault reporting processes required to support the Requested Services'.<sup>136</sup>
272. The Application also requests minimum service levels for provision of the wholesale bitstream service<sup>137</sup>.
273. Telecom notes that the rollout of Telecom's customer electronic interface, Electronic Ordering ('eOR') began in December 2004. 'Development of this interface started in March 2004 and it is currently undergoing testing in preparation for roll-out. Telecom will continue to develop this eOR to provide electronic interfaces where it is cost-effective to do so.'<sup>138</sup>
274. Telecom note that they will 'use the appropriate processes and OSS, whether electronic or manual, to provide TelstraClear with access to the wholesale bitstream service as required under the standard access principles (i.e. the "what")'.<sup>139</sup> Telecom note that it is planning to implement electronic ordering for its commercial UBS service in a coming version of eOR, assuming volumes make it cost-effective to do so.<sup>140</sup> Telecom submits that TelstraClear's request for six and twelve month time limits for implementation of the electronic interface for direct real-time interworking is not reasonably technically and operationally feasible.<sup>141</sup>
275. The efficient provision of OSS is an important aspect for the provision of wholesale services. The Commission notes that Telecom is currently developing an electronic ordering system for use by both its retail operations and for wholesale customers contemporaneously.
276. The Commission notes Telecom's agreement that 'the retail customers of access seekers should not experience any difference in the non-network service aspects such as fault repair and provisioning'.<sup>142</sup> Telecom is accordingly required to provide a level of operational support to TelstraClear, whether manual or automated, such that there is no material difference in provisioning or fault repair in regard to the experience of

<sup>136</sup> TelstraClear Application, 4 November 2004, para. 16.2(d), p. 8

<sup>137</sup> TelstraClear Application, 4 November 2004, Annex 1 *Description of Requested Services*, para. 1.2, pp.11-12.

<sup>138</sup> Telecom Submission, 16 December 2004, Appendix A, p. 53

<sup>139</sup> Telecom Submission, 16 December 2004, Appendix A, p. 54

<sup>140</sup> Telecom Submission, 16 December 2004, Appendix A, p. 54

<sup>141</sup> Telecom Submission, 16 December 2004, Appendix A, p. 54

<sup>142</sup> Letter from Telecom (Parkes) to the Commission, 8 April 2005

retail customers whether retail services reliant on bitstream access are supplied to TelstraClear or Telecom.

277. Concurrently, the Telecommunications Carriers' Forum (TCF) is developing a Telecommunications Churn draft code<sup>143</sup>, which the TCF intends to submit to the Commission for approval under Schedule 2 of the Act.
278. The Commission notes that the project scope of the project brief includes the industry-wide resolution of issues common to the Application and the interaction between carriers in respect of churn, fault reporting mechanisms, reassignment, information access and the monitoring and reporting.
279. The Commission expects that any further detailed implementation matters required to be dealt with to give effect to the overall OSS standard set by the Commission will either be agreed by the parties or will be dealt with by the TCF churn code. In respect of any residual operational support issues that the parties are unable to agree upon, either party may seek further resolution from the Commission.

#### *Static IP Addresses*

280. The Application requests that Telecom should configure the wholesale bitstream service so that TelstraClear can utilise static IP addresses for end users supplied with services utilising the wholesale bitstream service.<sup>144</sup>
281. Telecom says that it currently provides static IP addresses to a limited number of residential and SME end-users who pay a monthly levy for their static IP addresses.<sup>145</sup>
282. TelstraClear submits that, as the bitstream service is a layer 2 service, the access seeker is responsible for addressing, including the assignment and management of static addresses. TelstraClear's request is that Telecom do nothing in the configuration of the service which impedes static IP addressing.<sup>146</sup> TelstraClear further submits that '[t]he addressing role of the access provider's network is essentially limited to addressing necessary to create the "tunnel" between the end-user's modem and the access seeker's layer 2 network server.'<sup>147</sup>
283. At the wholesale workshop, Telecom notes that "[o]bviously the UBS service is a layer 2 service, or more strictly a layer 2 tunnel protocol service, which means the layer 3 activities are performed by the service provider, either Xtra in our case, or another ISP, which includes address management."<sup>148</sup>
284. Telecom notes two concerns. Firstly, that 'the indiscriminate use of IP addresses would put pressure on the overall IP address space... it is a finite resource', and that 'static IP addresses are valued by end users and because of that service that includes

<sup>143</sup> See Project Scope at <http://www.tcf.org.nz/outputs/?doc=a>

<sup>144</sup> TelstraClear Application, 4 November 2004, para. 16.2(e), p. 8.

<sup>145</sup> Telecom Submission, 16 December 2004, Appendix A, p. 55.

<sup>146</sup> TelstraClear Cross submission, 28 January 2005, pp. 9-10.

<sup>147</sup> TelstraClear cross submission, 28 January 2005, p. 68.

<sup>148</sup> Workshop Transcript, Telecom, Ralph Chivers, p. 89.

static IP addresses attach a premium price and in a retail minus construct which we have here our view is that that should be reflected through into the price of the underlying services.<sup>149</sup>

285. Telecom notes that because it doesn't operate and deal with layer 3 for bitstream, there is little additional cost to Telecom to supply a static IP address to an access seeker.<sup>150</sup>
286. The Commission considers that Telecom should provide a layer 2 service that does not prevent TelstraClear from providing either a static or dynamic IP address. The cost differential between Telecom providing a static or dynamic IP address is minimal, and the functionality to the end-user is provided by the access seeker in the provision of the layer 3 service. It is at the discretion of the access seeker to set a retail price for a static rather than dynamic IP address.

*Future bitstream availability in new areas*

287. TelstraClear requests that Telecom should make available wholesale bitstream services in any Telecom network area where at least 35 individual ADSL services have been requested by end users (whether subscribers to the Telecom retail services or services offered by Telecom wholesale customers). Telecom should provide TelstraClear with not less than 90 days' advance notice of the expected completion of upgrading of Telecom network in an area to support ADSL services and wholesale bitstream services should be made available no later than the date on which Telecom first commences to provide retail ADSL services in an area (including by way of a "soft launch").<sup>151</sup>
288. Telecom submits that requiring Telecom to make available wholesale bitstream services in any Telecom network area would require Telecom to build new network components to service TelstraClear customers. Telecom expresses concern that its investment decisions would be determined by its wholesale customers not by Telecom and Telecom would face an asymmetric risk of sunken investment where a wholesaler has none.<sup>152</sup> In addition, Telecom says that Telecom's ADSL upgrade plans are very dynamic and responsive to changes in demand and are typically not finalised 90 days prior to the actual completion of any upgrade.
289. TelstraClear submit that '[t]he purpose of TelstraClear's requested non-price terms is only to ensure that Telecom takes into account both retail and wholesale demand in making this assessment.'<sup>153</sup>
290. The Commission requires that Telecom deal with service requests by TelstraClear on the same basis as requests for new Jetstream connections. The Commission considers that there is an equal risk of sunk investment at both a retail and a wholesale level, from end-users who indicate an intention to purchase an ADSL service should it become available, but subsequently decide not to purchase the service when it then

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<sup>149</sup> Workshop Transcript, Telecom, Ralph Chivers, p. 89.

<sup>150</sup> Workshop Transcript, Telecom, Ralph Chivers, p. 90.

<sup>151</sup> TelstraClear Application, 4 November 2004, para. 16.2(f), p. 8.

<sup>152</sup> Telecom Submission, 16 December 2004, Appendix A, p. 56.

<sup>153</sup> TelstraClear cross submission, 28 January 2005, p. 70.

becomes available.

291. Telecom must give notice to TelstraClear of the expected completion of upgrading of its network in an area to support ADSL services immediately the operational decision has been made to carry out the upgrade, and in any event not later than the earliest date on which Telecom accepts a customer request to provide ADSL services in that area.

**Question 10: Does the 'Wholesale Jetstream & UBS Line check Toolkit' currently collect this information?**

*Service Transferral*

292. The Application requests that:

[I]f a service transferral from Telecom Retail or a Telecom wholesale customer to TelstraClear occurs part way through the customer's Telecom billing cycle, Telecom should not charge the customer for the service in respect of the period between the date of service transferral and the end of that billing cycle. If the service transferral to TelstraClear occurs part way through the Telecom wholesale billing cycle, TelstraClear also should pay the first month's charges on a rateable basis. If a service transferral away from TelstraClear occurs part way through the wholesale billing cycle, Telecom should not charge TelstraClear for the service in respect of the period between the date of service transferral and the end of that wholesale billing cycle. If the service transferral away from TelstraClear occurs part way through the Telecom retail or wholesale billing cycle (as applicable), the retail or wholesale customer involved in the service transferral also should pay the first month's charges on a rateable basis.<sup>154</sup>

293. Telecom say that it bills its Jetstream customers monthly. Should the customer cancel the service or move to another provider during that month, no refund is given. Telecom's billing systems are not set up to provide broken-period billing. Accordingly, Telecom submits that the request does not accord with the access principle as it is not technically or operationally practicable having regard to Telecom's network, and therefore can not be ordered under section 29.<sup>155</sup> Telecom submits that Telecom would have to significantly alter its billing systems to accommodate TelstraClear's proposal.<sup>156</sup>
294. Telecom also note that, 'as part of the IS plans, a billing system that provides the ability for pro-ration is due for implementation in mid-2005. At the time that Telecom provides pro-ration to its retail customers it will also provide it to wholesale services including the commercial UBS service (and any designated bitstream service)'.<sup>157</sup>
295. TelstraClear 'considers that Telecom's argument that Telecom's billing systems will not support part month billing when retail customers reassign to wholesale services is belied by the fact that Telecom currently does so in relation to wholesale line rental services'.<sup>158</sup>

<sup>154</sup> TelstraClear Application, 4 November 2004, para. 16.2(g), p. 8.

<sup>155</sup> Telecom Submission, 16 December 2004, p. 37.

<sup>156</sup> Telecom Submission, 16 December 2004, Appendix A, p. 56.

<sup>157</sup> Telecom Submission, 16 December 2004, Appendix A, pp. 56-57.

<sup>158</sup> TelstraClear cross submission, 28 January 2005, p. 10.

296. The Commission requires that Telecom ensure that on the transfer of a Jetstream customer to a TelstraClear bitstream service:
- A refund is provided to the Jetstream customer for any unused portion of the relevant billing period; and
  - TelstraClear is charged the bitstream access charge only in respect of a period commencing on the date the bitstream service transfer is implemented.
297. The Commission considers that pro rate billing is necessary so that inefficient costs of service transfer are not passed on to TelstraClear and that barriers to switching are minimised.

### **Rebates**

298. The Application sought a bitstream service with specific service levels, both network and non-network. TelstraClear also sought a system of rebates to be paid by Telecom for the failure to meet service levels. Telecom notes that it does not provide rebates to users of its Jetstream or commercial UBS services.
299. This determination specifies the manner in which the bitstream service is to be provided by Telecom to TelstraClear. By virtue of section 61, it is enforceable as a judgement of the High Court in its civil jurisdiction. The Commission accordingly does not consider that it is necessary to provide for sanctions for non-compliance by Telecom.

### *Other non-price terms*

300. TelstraClear request that ‘the other non-price terms of Decision 497 should apply to the supply of the wholesale bitstream service and the backhaul service.’<sup>159</sup>
301. The Commission has insufficient information to assess the appropriateness of this request and seeks additional information from the parties.

**Question 11: TelstraClear request that the other non-price terms of Decision 497 should apply to the supply of the wholesale bitstream service and backhaul service. What additional non-price terms do the parties consider should be included**

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<sup>159</sup> TelstraClear Application, 4 November 2004, para. 16.5, p. 9.

## DATE OF COMMENCEMENT AND EXPIRY

### Date of Commencement

302. TelstraClear request that the commencement date be the date of the initial determination.<sup>160</sup> Telecom agrees that the commencement date should be the date of the determination.<sup>161</sup>
303. The Commission considers that the date of this determination is the appropriate date of inception.

### Date of Expiry

304. TelstraClear request that the expiry date should be 24 months from the date of this determination. However, if either Telecom or TelstraClear has made a price review application in respect of the initial determination, the expiry date should be the later of 24 months from the date of the Commission's initial determination or 12 months from the date of the Commission's final price review determination.<sup>162</sup>
305. Telecom request that the expiry date should be 24 months from the date of the Commission's initial determination. Telecom does not accept TelstraClear's submission that the expiry date can become unspecified or variable pending the completion of a final pricing review (should either party apply). Telecom considers that section 30(e) of the Act requires that the determination include a fixed expiry date. An indeterminate expiry date is not permitted by the Act, and would place Telecom in the untenable position of being regulated for an unspecified period.<sup>163</sup>
306. The determination will expire 24 months from the date of the Commission's initial determination. Should a price review application be filed, the Commission has the power in a determination on such an application to set a new expiry date.

DATED this 27 day of April 2005




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Douglas Webb  
Telecommunications Commissioner

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<sup>160</sup> TelstraClear Application, 4 November 2004, para. 16.4(a), p. 9.

<sup>161</sup> Telecom's Cross-submission, 28 January 2005, para 212.

<sup>162</sup> TelstraClear Application, 4 November 2004, para. 16.4(b-c), p. 9.

<sup>163</sup> Telecom's Cross-submission, 28 January 2005, paras 212 and 213.

## Consolidated list of questions

Question 1: To what extent should the relevant wholesale product market be more broadly defined than bitstream only? In particular, please comment on the preliminary view that ADSL, cable, fibre and FWA-based broadband access services should be included in the same market. ....	21
Question 2: Bearing in mind the pricing referred to above, to what extent are symmetric and asymmetric broadband services substitutable?.....	21
Question 3: To what extent is Telecom’s commercial UBS pricing geographically differentiated?.....	21
Question 4: Comment is sought on the preliminary assessment of competition in the defined market, in particular in relation to the competition criteria listed above. ....	30
Question 5: What are the potential instability risks that might arise from the provision of a bitstream access service with unlimited downstream speed to the maximum technical capacity of the DSLAM, and a 128kbps upstream speed?.....	47
Question 6: Would the nature of that service described above effect the provision of data streams on the network at OSI layer 2?.....	47
Question 7: Do the suggested criteria appropriately measure the key service parameters necessary to assess whether the network performance of the bitstream service is consistent with the characteristics of the bitstream used by Telecom to supply its Jetstream services? .....	51
Question 8: Do the parties agree that the ITU definitions for the parameters are the appropriate definitions to use as the basis for measurement of key parameters? .....	51
Question 9: Does Telecom seek to recover the additional costs necessary to turn interleaving off for individual ports? .....	53
Question 10: Does the ‘Wholesale Jetstream & UBS Line check Toolkit’ currently collect this information? .....	57
Question 11: TelstraClear request that the other non-price terms of Decision 497 should apply to the supply of the wholesale bitstream service and backhaul service. What additional non-price terms do the parties consider should be included .....	58

**APPENDICES**

## Appendix A: Network Performance Measurement Parameters

Parameter	Definition <sup>164</sup>	Measurement location	Indicated Rate
Contention Ratio	‘The ratio of the number of end users of defined peak bandwidth (PIR) relative to the allocated bandwidth between the DSLAM and the first ATM switch during the peak busy hour of any day’ <sup>165</sup>	Between customer side of DSLAM and the network interconnection point	Nominal contention ratio of 50:1 for 95% of the time <sup>166</sup>
Jitter (also known as Delay variation)	‘The difference in packet transfer time between the minimum absolute Packet Transfer Delay and the maximum absolute Packet Transfer Delay of any packet over a 1 minute measurement interval for a stream of packets that are all the same size bit’. <sup>167</sup>	Checked by generated test traffic at the end-user’s premises and measured at the Network Connection Point	One way delay variation of <500ms averaged over 1 minute interval for more than 95% of the time <sup>168</sup>
Packet loss	‘Packet loss ratio is the ratio of the total lost packet outcomes to the total transmitted IP packets in a population of interest’. <sup>169</sup>	Checked by generated test traffic at the end-user’s premises and measured at the Network Connection Point	One way Packet Loss Ratio is <3% averaged over 1 minute interval for more than 95% of the time <sup>170</sup>
Latency (also known as Packet Transfer Delay)	‘The absolute time measured from the time the first bit of an IP packet is passed to the source (ingress) User Network Interface to the time the last bit of the packet is transmitted by the destination (egress) User Network Interface towards the user’s equipment or the host’. <sup>171</sup>	Checked by generated test traffic at the end-user’s premises and measured at the Network Connection Point	<50ms using 64 byte packet for >95% of the time averaged over 1 minute interval with interleaving either on or off <sup>172</sup>
Bitstream additional limit	Maximum upstream throughput of 128 kbps		Maximum upstream

<sup>164</sup> Where possible, the Commission has relied on the International Telecommunications Union (ITU) standard definitions.

<sup>165</sup> Definition provided by Telecom in Commerce Commission Workshop on UBS Technical Issues, 11 February 2005, p. 5.

<sup>166</sup> Commission Workshop on UBS, Telecom, *Commerce Commission Workshop on UBS Technical Issues – Questions 1 -12*, p. 17.

<sup>167</sup> ITU-T Y1541 and Appendix II of ITU-T Y1540 definition.

<sup>168</sup> Commission Workshop on UBS, Telecom, *Commerce Commission Workshop on UBS Technical Issues – Questions 1 -12*, p. 17.

<sup>169</sup> ITU Rec. Y1540.

<sup>170</sup> Commission Workshop on UBS, Telecom, *Commerce Commission Workshop on UBS Technical Issues – Questions 1 -12*, p. 17.

<sup>171</sup> ITU-T Y1540 and Y1541 definition.

<sup>172</sup> Telecom note that “the one way latency of < 50ms can be achieved with a 64 Byte packet with interleaving turned on or off”, *Commerce Commission Workshop on UBS Technical Issues – Question 1 – 12*, p. 19.

on access Principles (a) <sup>173</sup>			throughput of 128kbps
Bitstream additional limit on access Principles (b) <sup>174</sup>	Downstream throughput rate for data traffic sent to the end-user no less than 32 kbps	TelstraClear propose 5 minute average of those 1 minute measurements <sup>175</sup> . Telecom agree with proposed sampling methodology <sup>176</sup>	Downstream throughput rate for data traffic sent to the end-user no less than 32 kbps
Bitstream additional limit on access Principles (c) <sup>177</sup>	Downstream throughput rate for data traffic sent to the end-user average not less than 256 kbps	TelstraClear propose calculated as a 60 minute average of those 1 minute measurements <sup>178</sup> . Telecom agree with proposed sampling methodology <sup>179</sup>	Downstream throughput rate for data traffic sent to the end-user average not less than 256 kbps
Interleaving	Rearrangement of parts of the DSL line signal so that they alternate in a different known sequence so that when restored the line signal retains its integrity under conditions of injected line noise. <sup>180</sup>		optional
Delay Variation			See Jitter
Service Availability	Measured over a rolling 30 day period.		99.3% (24x7)

<sup>173</sup> Designated service, *Access to, and interconnection with, Telecom's fixed PDN*, Schedule 1, Limits on access principles (a), Telecommunications Act 2001.

<sup>174</sup> Designated service, *Access to, and interconnection with, Telecom's fixed PDN*, Schedule 1, Limits on access principles (b), Telecommunications Act 2001.

<sup>175</sup> TelstraClear cross submission, 28 January 2005, p. 26.

<sup>176</sup> Telecom cross submission, 26 January 2005, p. 9.

<sup>177</sup> Designated service, *Access to, and interconnection with, Telecom's fixed PDN*, Schedule 1, Limits on access principles (c), Telecommunications Act 2001.

<sup>178</sup> TelstraClear cross submission, 28 January 2005, p. 26.

<sup>179</sup> Telecom cross submission, 26 January 2005, p. 9.

<sup>180</sup> Telecom submission, 16 December 2004, p. 64.

**Appendix B: International Benchmarking Study of Avoided Costs Saved**

# International Benchmarking Study

A comparative review of retail  
minus wholesale discounts

November 2002

# ***Contents***

<b>1</b>	<b>Introduction</b>	<b>5</b>
<b>2</b>	<b>Methodological issues</b>	<b>6</b>
<b>3</b>	<b>Study results</b>	<b>7</b>
3.1	Selection of participating countries	7
<b>4</b>	<b>Data collection</b>	<b>10</b>
4.1	Comparability assessment	10
4.2	Establishing an empirical relationship between wholesale discounts and the comparability data	15
4.3	Regression analysis	19
4.4	Discount data	20
4.5	Features of the discount data	23

# ***Tables & Figures***

Table 1: Comparability criteria for selected US states and New Zealand.....	13
Table 2: Summary of discount data .....	20
Figure 1: Discounts of selected US states .....	21

# ***Executive Summary***

1. The Telecommunications Act 2001 (the Act) provides for the Commerce Commission to determine the initial discounts that will apply to the wholesale provision of designated services on the basis of international benchmarks. This report presents the findings of the Commission's benchmarking study of wholesale discounts, and takes into consideration written and oral submissions by interested parties. It describes the Commission's approach to choosing comparator jurisdictions and presents the wholesale discount rates required in order to obtain appropriate benchmarks.

## Methodology

2. The Act requires the Commission to fix a discount off retail price benchmarked against discounts in 'comparable countries'.
3. Globally, the use of a regulated wholesale pricing policy based on retail minus avoided costs is rare. The survey identified only three countries that mandate wholesale pricing in this way: Australia, the United Kingdom and the United States. Amongst these, the Commission identified individual US States as potential comparators, as the local regulatory regimes are similar to that described in the Act. Owing to differences in methodology and scope, the Commission considers that the UK experience is not a relevant benchmark. The Commission also considers Australian wholesale discounts to be unsuitable as benchmarks for New Zealand for similar reasons.
4. CostQuest Associates, on behalf of the Commission, developed a survey to collect data on discount values, cost calculations, and wholesale policy from regulatory agencies, incumbent operators and new entrants. Additional secondary data was collated on wholesale discounts and the cost compatibility criteria. In light of the comments received on earlier drafts of the International Benchmarking paper<sup>1</sup>, the Commission has updated the benchmarked wholesale discount rates to include as many U.S. states as possible from publicly available sources. It was observed that most U.S. states expressed their wholesale discounts as a percentage of the retail price and calculated them on the basis of accounting top-down cost principles. Most respondents used a single wholesale discount for retail services, although a minority had different discounts depending on the type of service and end user.
5. Data for forty-seven states was collected for the benchmarking study. For the thirty-three states that use a single discount rate, the rates ranged from 12.20% to 29.47% with an average of 18.91%. The remaining fourteen states use multiple discounts. All wholesale discount data is current as at the date of this paper.

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<sup>1</sup> "International Benchmarking Discussion Paper", Commerce Commission, 5<sup>th</sup> April 2002.

## **Executive Summary**

6. In some of the benchmark jurisdictions, discounts differ depending on whether the wholesale services offered are to be resold to business or residential customers, which should ideally reflect differences in the retail costs saved. However, there is no clear pattern in these differentiated discounts that would unambiguously suggest that retail costs incurred in serving residential customers are higher than those incurred for business customers or vice versa.

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## **1 Introduction**

7. This Report presents the findings of the Commission's benchmarking study of wholesale discounts. It is published with the intention of describing the Commission's approach to choosing comparator jurisdictions and discount rates required in order to obtain appropriate benchmarks for application of the initial pricing principles in making a determination of the terms of supply of certain wholesale services.
8. On 5 April, the Commission released a benchmarking discussion paper based on a study undertaken by CostQuest Associates in conjunction with Commission staff on behalf of the Commerce Commission for industry consultation. The purpose of the study was to provide information to support the Commission's role in making access determinations.
9. Written submissions in response to this discussion paper were received from Econet Wireless New Zealand Limited, Telecom New Zealand Limited, TelstraClear Limited, Telecommunications Users Association of New Zealand ("TUANZ"), Vodafone Limited, Walker Wireless Limited and WorldxChange Communications Limited.
10. On 16 and 17 May, the Commission held a public conference on the benchmarking discussion paper, where Telecom, TelstraClear, Vodafone and TUANZ provided oral submissions.
11. The Commission, after further consideration of the written submissions by interested parties, and the oral submissions made at the conference, revised the report. This revised report reflects the consideration of the issues raised.

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## 2 Methodological issues

12. The Act provides for the Commerce Commission (the Commission) to determine the discounts that will apply to the wholesale provision of designated services (wholesale discounts). The purpose of the wholesaling regime (in line with other provisions in Part 2 and Schedules 1 to 3 of the Act) as set out in Section 18 of the Act is "*to promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand,*" taking into account the effect on efficiencies that will result when assessing "*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.*"
13. Subject to sections 22 and 23 of the Act, applicants may make an application to the Commission under section 20 for a determination of all or some of the terms on which a designated access service must be supplied during a period of time specified in the application. The initial pricing principle to be applied in making a determination following an application requires the Commission to fix a discount off retail price benchmarked against discounts in 'comparable countries', whereas the final pricing principle will be set on the basis of cost studies.

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## 3 Study results

### 3.1 Selection of participating countries

14. Globally, the use of a regulated wholesale pricing policy based on retail minus avoided costs is rare. This reflects the fact that telecommunications regulation in many countries has not yet advanced to this stage. Meanwhile, some OECD countries have considered, but rejected, mandatory wholesale discounts. For example, Canadian legislation forbids incumbent telecommunications providers from prohibiting the resale of retail services, but the Canadian Regulatory Authority declined to establish mandatory discounts for the resale of retail services. The survey identified only three countries that regulated wholesale pricing policy for telecommunications on a retail minus basis: Australia, the United Kingdom and the United States. Each of these countries is discussed below.

#### 3.1.1 Australia

15. In a recent report<sup>2</sup>, the Australian Competition & Consumer Commission (ACCC) set out its procedure for calculating indicative prices for Telstra's Local Carriage Service (LCS), a local call resale service. The ACCC calculated wholesale prices for LCS using a "retail minus retail costs" methodology, with the objective of promoting competition in the local call retail market.
16. The ACCC defines the relevant cost measure as average retail costs and not as a measure of retail costs actually avoided. Its definition of avoidable cost saved is:

*"Avoidable costs are the costs that an access provider could avoid if it ceased retail operations completely, whereas avoided costs are those costs that the access seeker actually avoids when it ceases retailing to the end-users who are now supplied by its competitor... What is sought to be measured, however, is not so much the quantum of costs that the access provider could conceivably avoid through its supply of wholesale services but rather the average retail cost of supplying a particular service (e.g. local calls). In this regard, the definition of avoidable costs provides a means of identifying and estimating retail costs. That said, the Commission acknowledges that the terminology 'avoidable costs' is capable of creating the impression that the access provider can avoid those costs, when in reality this may not occur. Consequently, the*

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<sup>2</sup> ACCC, April 2002, *Local Carriage Service pricing principles and indicative prices*

## Study results

*Commission has chosen to express the methodology as 'retail-minus retail costs'."*

17. The indicative prices released by the ACCC were released to inform the market of the prices that the ACCC was likely to adopt if it had to arbitrate future access disputes or assess undertakings for access to the services. The ACCC noted that the prices were only indicative and not binding on the ACCC and the parties to any future arbitrations. In these circumstances, the Commission does not intend to include Australian data in the benchmarking analysis below.

### 3.1.2 United Kingdom

18. In the United Kingdom, there are two wholesale telecommunications services priced on a retail minus basis: Calls and Access for fixed lines; and Indirect Access (IA) to mobile networks. However, the Commission does not consider that either of these services could provide suitable benchmarks for New Zealand:
  - As Network Strategies/Analysys point out in their report for Clear Communications<sup>3</sup>, the wholesale prices for the Calls and Access product are calculated using a fully rebalanced and purely notional retail tariff and not on an available retail tariff. As such, it is not an appropriate comparator for New Zealand. In addition, the UK Calls and Access product is not considered very successful and Oftel is currently in the process of replacing it with a cost-based Wholesale Line Rental product<sup>4</sup>.
  - IA to mobiles is based on an available retail tariff and has been mandated on a retail minus basis for BT Cellnet (now O<sub>2</sub>) and Vodafone. Although the methodology used is comparable to New Zealand, a comparison with fixed line wholesale access would be inappropriate owing to the very different cost structures involved in supplying mobile and fixed line services. In addition, Oftel is likely to remove this obligation in the near future as it has recently revoked its determination that BT Cellnet and Vodafone have market influence<sup>5</sup> (which was a key factor in its decision to mandate conditions of access for IA to mobile services).

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<sup>3</sup> Network Strategies and Analysys, 30 October 2001, *Wholesaling Issues in Telecommunications*, Final report for Clear

<sup>4</sup> See Oftel, January 2002, *Protecting consumers by promoting competition*

<sup>5</sup> Oftel, April 2002, *Determinations to remove the determinations that Vodafone and BT Cellnet have Market Influence*

## Study results

### 3.1.3 United States

19. The United States employs a federal regulatory system overlaying state-level implementation of access principles and state-level price regulation. Wholesale prices are therefore set at a state rather than a national level. Accordingly, the United States as a country is not a relevant comparator for the purposes of this study. However, the regulatory framework at the state level for wholesale access pricing is similar to that under the Act. The Commission has accordingly considered individual US States as potential comparators and has applied comparability criteria at the state level.
20. Under the United States Telecommunications Act of 1996 (TA96), the Federal Communications Commission is charged with promulgating rules, but the state commissions are responsible for arbitrating disputes and establishing prices where necessary. In its First Report and Order implementing TA96, the FCC recommended that avoided costs in the case of the wholesale discount for resale services <sup>6</sup>:
  - shall include direct retail accounts and a pro-rata portion of indirect accounts;
  - shall be calculated as if the ILEC were no longer in the retail business; and
  - do not have to actually be saved by the incumbent.
21. Furthermore, the FCC suggested a default wholesale range of between 17-25% below retail rate levels. This default range can be revised for an individual carrier within a given state with an actual wholesale costs study that is approved by the relevant state commission. In essence, the FCC required that an avoided, rather than an actual, cost standard be applied. Many of the ILECs interpreted the requirements of the US Telecommunications Act of 1996 differently to the FCC, and proposed discounts more closely representing a 'retail minus actual cost'. This data is generally available and can be compared with the actual rulings, based on avoided costs, implemented by the state Public Utility Commissions.

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<sup>6</sup> Federal Communications Commission (FCC), Re-Implementation of the Local Competition Provisions of the Telecommunications Act of 1996. (FCC 96-325)(release August 8, 1996). Final Rules Appendix E: Country Profiles of Survey Responses.

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## 4 Data collection

22. The Commission sought to collect wholesale discount information for the 50 U.S. states from publicly available sources. Data for 47 states was collected. There were three states for which information was not available to the Commission, those states being Illinois, Hawaii and Alaska.
23. Public sources were: the Bureau of Economic Analysis of the US Department of Commerce for the Gross State Product (GSP) data, The US Department of Labor for the telecommunications labour cost proxy, US Census 2000 for the population density data, The Federal Communications Commission and US Census 2000 for tele-density and the US Census Bureau for the urbanisation data<sup>7</sup>.
24. In each state the data was collected from the largest incumbent operator (ILEC). The data comprises wholesale discounts for Verizon, SBC Communications, Bell South and Qwest.

### 4.1 Comparability assessment

25. Along with the wholesale benchmark data the Commission has gathered information on factors that might lead the Commission to refine its comparability assessment. The information is selected on the basis that it is considered to exhibit some relationship with wholesale discounts and so a comparison of these factors with the equivalent New Zealand measures might provide some basis for the choice of a subset of comparator states from the full set of 47 states. This comparability data represents three categories those being telecommunications, population and economic data.
26. The comparability data falling into the three categories are as follows:
  - Population data:
    - Population density (number of people per square kilometre); and
    - Urbanisation (proportion of people living in urban centres)
  - Telecommunications data:
    - Tele-density (access lines per 100 population); and
    - State telecommunications sector labour expenditure (proxied by employee salary)
  - Economic data:

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<sup>7</sup> See table 1.

## Data collection

- Gross domestic product (GDP) or Gross state product (GSP)
27. Network costs represent a significant cost category. These in turn depend on a number of factors, including the total size of the network, the level of capacity utilisation, the choice of technology, installation and procurement costs and the distribution of the population, which affects actual infrastructure requirements.
28. For telecommunications companies, the average cost of supplying network services should be closely correlated to the network density, as this will in part determine the efficiency with which network infrastructure can be deployed. There are a number of reasons for this:
- The price per unit for core network equipment typically drops as a telecommunications provider buys larger sized units. For example, the price per pair on a 25 pair cable is higher than the price per pair on a 4,200 pair cable.
  - A significant amount of telephone plant is sized and sold in fixed capacity steps. For example, channels on a termination frame may typically be purchased in quantities of 500.
  - The greater the distance between switches and the greater the distances between customers served by a switch, the longer the cabling that will be required to serve them.
29. The ability or inability to use the full capacity of these items of plant will influence the ultimate cost of plant on a working unit basis. Company-specific data on network density is generally unavailable. However, data on population distribution and telecommunication line density can be used as a suitable proxy for international comparisons.
30. Population characteristics have a significant bearing on network density. A recent study by the Productivity Commission of Australia<sup>8</sup> found that differences in population distribution between Australia and several other countries and US states were an influence on the cost of providing local telephone services. Population density can be used as a proxy for the relative average cost of supplying network services to individual customers. However, it will tend to exaggerate the potential cost of network roll-out in situations where the population is highly concentrated relative to the total land mass. In this regard, urbanisation – considered in combination with population density – provides a useful proxy for the variation in the distribution of population. In general, much lower unit costs can be expected in serving urban areas than rural ones, and, in turn, from serving a relatively densely populated rural region than a sparsely populated one.

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<sup>8</sup> Productivity Commission of Australia (August, 2000) Population distribution and telecommunication costs, Staff Research Paper.

## Data collection

31. Any data on population distribution should be considered in combination with data on tele-density as this will determine the actual scope to utilise equipment in any given area. In this regard, infrastructure utilisation may also be affected by the number of operators competing in the same geographic area to the extent that the duplication of network infrastructure reduces the scope to maximise the efficient use of any given piece of equipment.
32. With respect to installation and maintenance costs, these are driven in part by population distribution (longer cables may be more costly to lay and maintain) and also by labour cost and productivity.
33. Finally, network costs will also be driven by the level and type of demand for services from customers. The GSP per capita data provides a proxy for the ability of the population to purchase telecommunications services. As a general rule, the wealthier and more economically advanced the state is (as proxied by a higher GSP per capita), the higher the likely demand for telecommunications services, especially sophisticated data services. This is likely to translate into the earlier and more extensive deployment of new network technologies, such as digital switching.
34. Unlike network costs, which have a large procurement component, retail costs are labour-intensive and are characterised by relatively low fixed costs. In general, one would expect the greater the level of labour costs relative to procurement costs, the larger the share of retail costs in total costs. In response to comments received during the consultation exercise, the Commission has examined US telecommunications labour costs in relation to the equivalent labour cost in New Zealand. This shows that labour cost differences between New Zealand and the US states are not as significant as between states. The data shows that New Zealand's labour cost falls within the range of labour costs across the US states.
35. The Commission recognises that stringent use of a limited set of selection variables could potentially exclude some comparators to the extent that a meaningful benchmarking exercise is not possible. This is a critical point as the selection of the comparability variables is based on assumptions about what the determinants of wholesale discounts are likely to be. Therefore it is appropriate to examine the basis for such assumptions and then to conduct tests to determine whether there is an empirical relationship between wholesale discounts and the comparability criteria proposed.
36. Across the 47 states, there is a significant variation in the criteria, and no state is particularly similar to New Zealand with respect to all criteria. Nevertheless, looking across the criteria, it is the Commission's view that these states in general have sufficiently similar characteristics to provide a benchmark for determining a range in which the New Zealand wholesale discount should be set.

**Table 1: Comparability criteria for selected US states and New Zealand**

State	Population Density <sup>9</sup>	GSP <sup>10</sup>	Labour Costs <sup>11</sup>	Tele-density <sup>12</sup>	Urbanisation <sup>13</sup>
Alabama	33.84	\$25,938.25	\$49,214.00	49.7	70.1
Arizona	17.46	\$28,152.48	\$47,286.00	57.8	87.8
Arkansas	19.82	\$24,338.67	\$45,438.00	37.1	48.6
California	83.90	\$36,120.89	\$63,505.00	66.8	96.7
Colorado	16.03	\$35,385.44	\$67,489.00	66.2	84
Connecticut	271.51	\$43,893.74	\$64,018.00	63.8	95.6
Delaware	154.93	\$44,643.95	\$59,022.00	72.9	81.6
Florida	114.49	\$27,599.58	\$47,222.00	70.1	93
Georgia	54.62	\$33,773.72	\$59,193.00	54.6	68.9
Idaho	6.03	\$26,356.44	\$44,423.00	54.8	38.3
Indiana	65.47	\$35,613.70	\$56,761.00	60.5	84.5
Iowa	20.24	\$29,100.67	\$43,863.00	39.1	44.6
Kansas	12.71	\$30,018.03	\$52,982.00	49.2	56.4

<sup>9</sup> Ref. US Census Bureau Census 2000, Geographic Comparison Table;

<sup>10</sup> New Zealand GDP per population is from the ITU, expressed in \$U.S., and adjusted using the World Bank 2001 Purchasing Power Parity (PPP) values. The U.S. figures are Gross State Product (GSP) taken from Regional Accounts Data, Bureau of Economic Analysis of the U.S. Department of Commerce;

<sup>11</sup> Average cost of labour in the telecommunications sector per employee per annum proxied by state specific telecommunications sector salary expenditure. With the exception of the value for New Zealand, this data has been taken from the U.S. Department of Labour statistics. The corresponding figure for New Zealand has been obtained by taking from the Telecom annual report for the year ended 30 June 2001 the New Zealand labour expenses for 2001 (NZ\$M 372) and divide these by New Zealand personnel numbers for 2001 (5,242). The resulting labour cost per employee per year for 2001 (NZ\$ 70,965) has then been converted using an exchange rate of 0.55, which the Commission has previously used in the context of its interconnection determination;

<sup>12</sup> Access lines per 100 population. Ref. FCC 2000 Statistics of Communications Common Carriers (SOCCC) Table 2.19 – Total Billable Access Lines and U.S. Census Bureau Census 2000;

<sup>13</sup> Ref. U.S. Census Bureau 1990 Census of Population and Housing, Population and Housing Unit Counts (CPH-2-1).

Data collection

Kentucky	39.28	\$27,804.41	\$43,453.00	48.8	55.7
Louisiana	39.63	\$28,640.12	\$41,996.00	52.9	75.2
Maine	15.95	\$26,822.01	\$49,321.00	56.5	35.8
Maryland	209.32	\$32,882.37	\$60,403.00	72.7	92.7
Massachusetts	312.80	\$41,156.56	\$60,905.00	70.1	96.1
Michigan	67.60	\$31,323.21	\$50,044.00	60.6	82.6
Minnesota	23.87	\$34,931.75	\$50,957.00	47.6	70.1
Mississippi	23.41	\$22,772.16	\$45,145.00	46.5	35.9
Missouri	31.36	\$30,329.33	\$49,126.00	55.6	68
Montana	2.39	\$22,793.30	\$42,952.00	42.9	33.4
Nebraska	8.61	\$31,407.80	\$50,442.00	47.0	51.8
Nevada	7.03	\$34,759.29	\$46,353.00	66.2	86.1
New Hampshire	53.23	\$35,294.14	\$57,334.00	64.1	60.2
New Jersey	438.18	\$39,570.97	\$72,484.00	81.0	100
New Mexico	5.79	\$27,406.12	\$35,866.00	47.5	57
New York	155.24	\$39,492.15	\$66,069.00	58.1	91.9
<b><u>New Zealand</u></b>	<b>14.00</b>	<b>\$20,049.00</b>	<b>\$39,031.00</b>	<b>49.6</b>	<b>85.9</b>
North Carolina	63.81	\$32,371.96	\$50,132.00	57.2	67.1
North Dakota	3.59	\$26,452.82	\$42,772.00	34.0	43.1
Ohio	107.11	\$31,403.03	\$49,909.00	57.6	81
Oklahoma	19.43	\$24,874.70	\$39,834.00	46.4	60.5
Oregon	13.75	\$32,106.75	\$51,240.00	58.8	72.7
Pennsylvania	105.84	\$31,146.35	\$53,953.00	63.3	84.5
Rhode Island	387.50	\$30,671.96	\$51,103.00	62.7	93.8
South Carolina	51.45	\$26,724.50	\$43,655.00	42.3	70
South Dakota	3.82	\$28,759.58	\$43,499.00	37.2	34
Tennessee	53.30	\$29,951.40	\$47,807.00	51.0	67.8
Texas	30.75	\$32,847.78	\$56,111.00	51.1	84.5
Utah	10.51	\$28,112.52	\$46,552.00	52.2	76.7
Vermont	25.42	\$28,260.90	\$50,753.00	58.8	27.9
Virginia	69.06	\$34,002.61	\$66,379.00	65.0	41.9
Washington	34.22	\$35,516.41	\$66,432.00	60.7	82.9
West Virginia	29.01	\$22,465.86	\$42,728.00	47.0	41.9

## Data collection

Wisconsin	38.16	\$30,868.76	\$46,392.00	46.4	67.8
Wyoming	1.97	\$35,353.66	\$44,013.00	52.9	29.6

### **4.2 Establishing an empirical relationship between wholesale discounts and the comparability data**

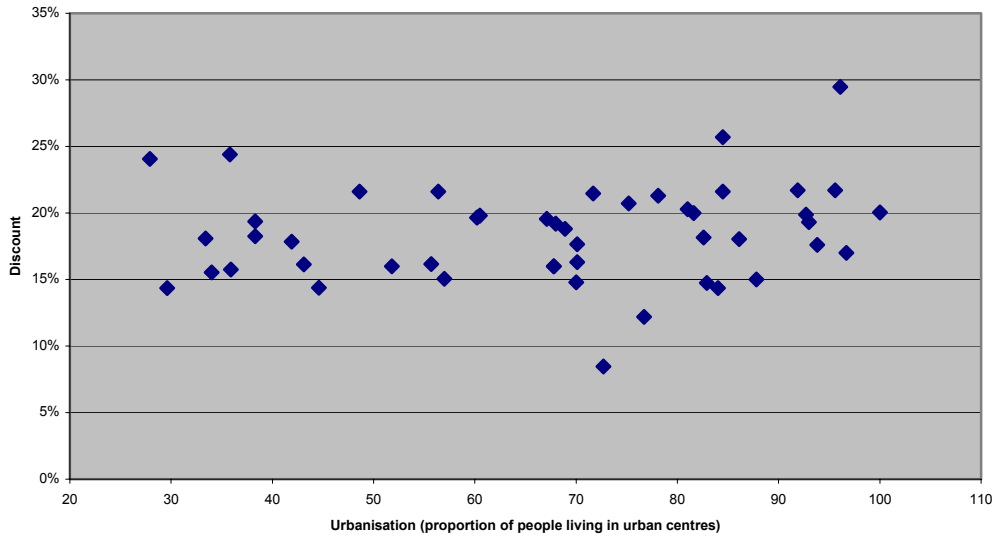
37. The data for the five comparability criteria were collected from a number of different sources and at a theoretical level bear some relationship to the level of wholesale discounts observed. The Commission has examined the comparability data for observable relationships that might either assist the assessment of comparability or, more particularly, give the Commission some basis for selecting an appropriate discount.
38. For the purposes of the analysis, where a state employs separate business and residential discounts the Commission has averaged the two discounts on an equal basis to create a single discount structure across all states. Lacking the information required in order to establish appropriate weighted average discounts<sup>14</sup> the Commission regards this as appropriate and notes that the use of a simple average would not in any way affect the results for the purposes of determining comparability.
39. Below are plots of wholesale discounts against four of the comparability criteria: urbanisation, tele-density, GSP per capita and population density. A visual appraisal of data in this way should highlight any features that will assist the Commission's analysis.

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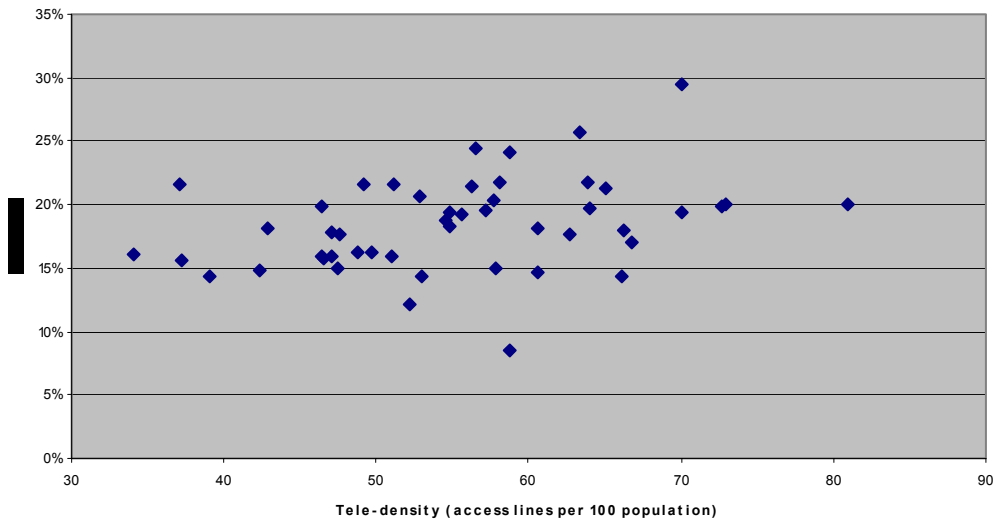
<sup>14</sup> This would include information on the relative volumes of business and residential services offered, and the corresponding retail prices.

# Data collection

### Discount versus urbanisation

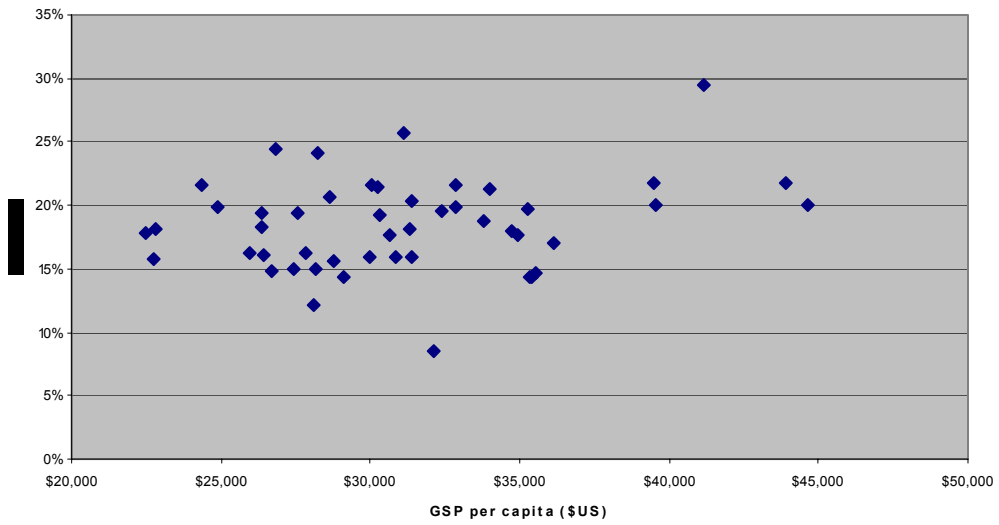


### Discount versus tele-density

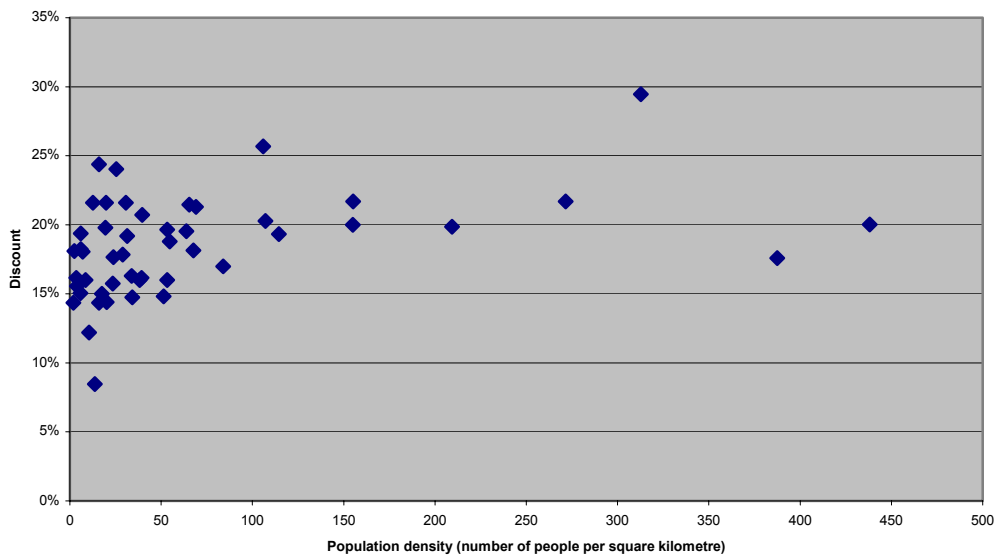


Data collection

Discount versus GSP per capita



Discount versus population density



40. The scatter plots presented above reveal a lack of any clear relationship between wholesale discounts and the four comparability criteria as shown.

Data collection

- 41. Based on submissions from the parties labour costs are considered to contribute significantly to the costs associated with retailing activities<sup>15</sup>. The Commission has accordingly conducted a more detailed analysis of the relationship, if any, between wholesale discount levels and labour cost.
- 42. Below is a plot of wholesale discounts against labour cost, grouped by ILEC.



- 43. The plot shows that the discount data falls into roughly three or four different groups based on company name with the higher discounts for Verizon being associated with a generally higher labour cost and the lower discounts for Qwest being associated with a generally lower labour cost. This particular feature provides evidence of a systematic relationship between the company name and the level of the wholesale discount. The broadly flat nature of the trend lines suggests however that a particular company might offer discounts that apply over a range of different labour costs and so casts doubt on the assumption that labour cost is a determinant of wholesale discount, in this case.

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<sup>15</sup>n/e/r/a "Wholesale Business Service Benchmarks For Telecom New Zealand", August 2002, pp 7

### 4.3 Regression analysis

44. The relationship observed above might extend to the other comparability criteria in a similar fashion or alternatively there might be some other patterns of causality and so the Commission has sought to model the relationships between wholesale discount and comparability criteria by employing linear regression analysis<sup>16</sup>.
45. By initially regressing wholesale discount on labour cost, population density, GSP, tele-density and urbanisation, results in an adjusted R square of approximately 0.1<sup>17</sup>.
46. This gives a measure of the overall explanatory power or goodness-of-fit of the model and in general the higher this value is, the better the fit of the model. In this case the model yielded a low value, which can be expected given that there is an assumed systematic variation in the data due to the observed discount/labour cost relationship.
47. This analysis can be improved upon by the use of dummy variables in order to capture the effect of the systematic relationship assumed. This can be conceptualised as a shifting of the trendline intercept in the plot of discount versus labour cost above.
48. As an additional regression, the Commission has added dummy variables to the model to account for the effect of the company name. This pass results in an adjusted R square of 0.43. Although not particularly high, this indicates that the model is better explaining the variation in the wholesale discount data than without the dummy variables. It is noteworthy that this result is characteristic of cross-sectional studies of this nature where data is gathered from a number of economic units, here telecommunications companies, at a given point in time.
49. By conducting a further test, the Commission concludes that the combined effects of company name have a statistically significant impact upon the wholesale discount level<sup>18</sup>
50. Given that the comparability criteria overall fail to exhibit any significant statistical relationship to the wholesale discount data the Commission has sought to employ more elaborate econometric techniques to model the data. On the basis of evidence of a systematic relationship between wholesale discount and company name the data was modelled using a dummy variable regression. This analysis failed to satisfactorily explain variations in wholesale

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<sup>16</sup> Least squares estimation.

<sup>17</sup> The adjusted R square measure provides a penalty for over-including descriptive variables in the model as doing so will always improve the 'fit' of the model at the expense of parameter efficiency.

<sup>18</sup> An F-test at the 5% level of significance leads us to reject the joint null hypothesis that the coefficients attaching to the dummy variables equal zero.

Data collection

discounts using the comparability criteria though indicated that a systematic relationship does exist between wholesale discount and company name.

51. As a result of this analysis the Commission has concluded that a comparability assessment augmented by the use of the chosen comparability criteria is not supportable. The Commission therefore finds no basis for including or excluding particular states and so will select benchmarks from within the range indicated by the 47 states for which the Commission has collected wholesale discount data.

**4.4 Discount data**

52. The discounts published by each state are listed in Table 2. For single discounts, these range from a low of 12.2% in Utah to a high of 29.47% in Massachusetts. The unweighted average discount is 18.91%.

**Table 2: Summary of discount data**

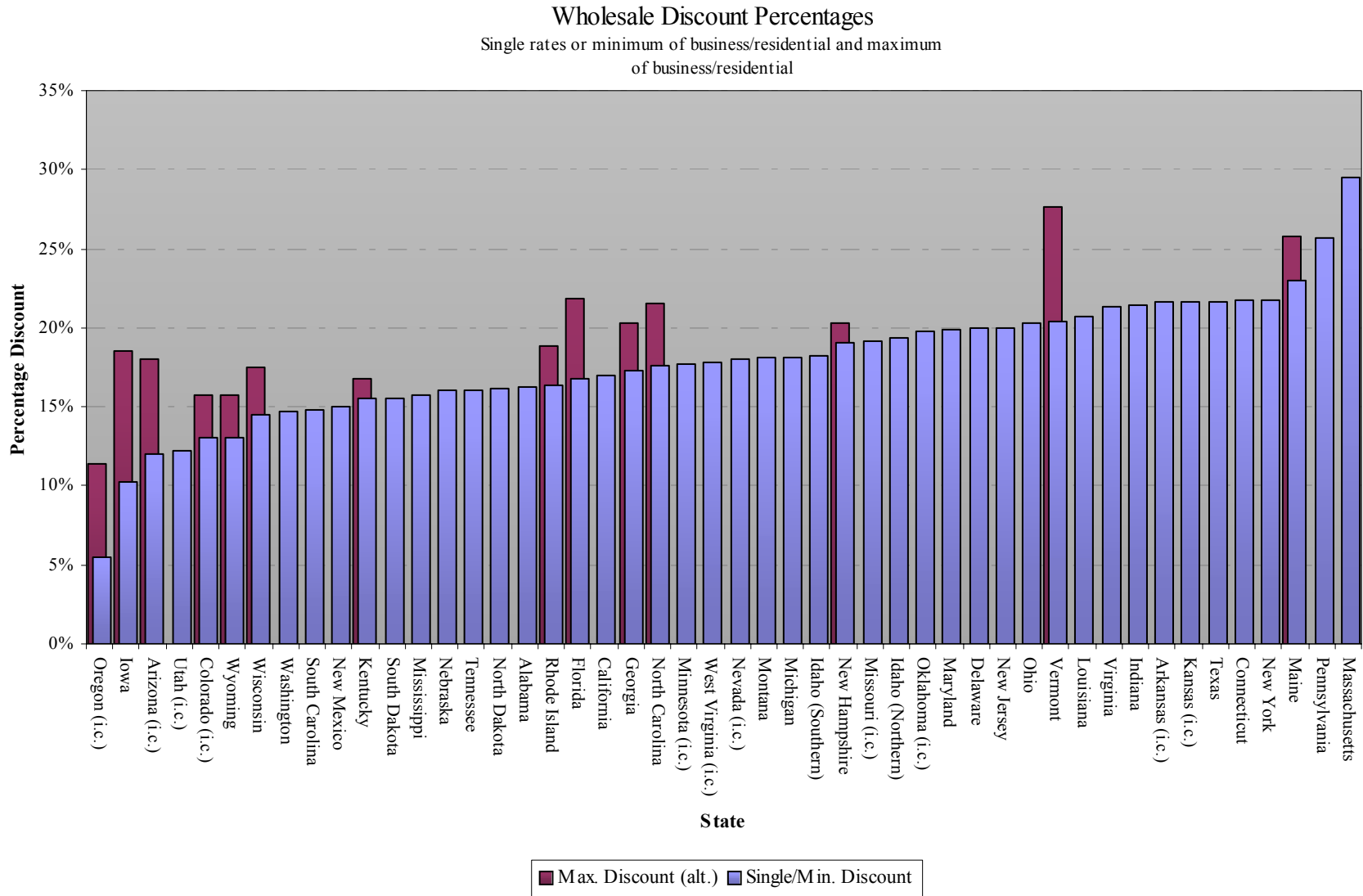
State	Company	Single Value	Business	Residential
Oregon (i.c.)	Qwest		11.43%	5.49%
Iowa	Qwest		18.50%	10.27%
Arizona (i.c.)	Qwest		18.00%	12.00%
Utah (i.c.)	Qwest	12.20%		
Colorado (i.c.)	Qwest		15.70%	13.00%
Wyoming	Qwest		15.70%	13.00%
Wisconsin	SBC		17.50%	14.50%
Washington	Qwest	14.74%		
South Carolina	Bell South	14.80%		
New Mexico	Qwest	15.05%		
Kentucky	Bell South		15.54%	16.79%
South Dakota	Qwest	15.55%		
Mississippi	Bell South	15.75%		
Nebraska	Qwest	16.00%		
Tennessee	Bell South	16.00%		
North Dakota	Qwest	16.15%		
Alabama	Bell South	16.30%		
Rhode Island	Verizon		16.38%	18.82%
Florida	Bell South		16.81%	21.83%

Data collection

California	SBC	17.00%		
Georgia	Bell South		17.30%	20.30%
North Carolina	Bell South		17.60%	21.50%
Minnesota (i.c.)	Qwest	17.66%		
West Virginia (i.c.)	Verizon	17.84%		
Nevada (i.c.)	SBC	18.05%		
Montana	Qwest	18.10%		
Michigan	SBC	18.15%		
Idaho (Southern)	Qwest	18.25%		
New Hampshire	Verizon		20.25%	19.04%
Missouri (i.c.)	SBC	19.20%		
Idaho (Northern)	Qwest	19.37%		
Oklahoma (i.c.)	SBC	19.80%		
Maryland	Verizon	19.87%		
Delaware	Verizon	20.00%		
New Jersey	Verizon	20.03%		
Ohio	SBC	20.29%		
Vermont	Verizon		27.66%	20.43%
Louisiana	Bell South	20.72%		
Virginia	Verizon	21.30%		
Indiana	SBC	21.46%		
Arkansas (i.c.)	SBC	21.60%		
Kansas (i.c.)	SBC	21.60%		
Texas	SBC	21.60%		
Connecticut	Verizon	21.70%		
New York	Verizon	21.70%		
Maine	Verizon		25.74%	23.03%
Pennsylvania	Verizon	25.69%		
Massachusetts	Verizon	29.47%		

53. The data is represented visually in the following figure.

**Figure 1: Discounts of selected US states**



#### **4.5 Features of the discount data**

54. A number of observations can be made about the approach used to develop wholesale discounts in the United States:

- Almost every discount is expressed as a percentage of the retail price. In calculating the size of the discount, most states used retail revenues as the denominator.
- Wholesale discounts are typically based upon accounting top-down cost principles. Only one company, SBC, proposed wholesale discounts based on more detailed, bottom-up forward-looking costs. The Commission notes that top-down cost models are often criticised in relation to cost-plus based regulation, owing to their tendency to overstate costs where an operator is inefficient. However, this tendency may be a virtue in the case of wholesale discount regulation. If an access provider's retailing costs are inefficiently high, this will reduce the price and create an opportunity for a service provider to enter the market by undercutting the access provider's retail price. This in turn will intensify pressure on the incumbent to eliminate inefficiencies. Overall, there is a much stronger case for the use of top-down costing methods for the purposes of implementing retail-minus regulation than there would be for cost-based access price regulation.
- A majority of US states use a single wholesale discount value, which applies to all retail services. The remainder employ variations of a multiple discount structure, depending on the type of service provided. Typically, different services are categorised depending on whether they include operator services/directory enquiries or are targeted at business or residential end users. Most firms that are subject to multiple discounts also employ a derived 'composite' discount that applies to other services for which a specific discount is not provided.