Access Pricing Principles — Telecommunications

a guide

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Preface

Part XIC of the *Trade Practices Amendment (Telecommunications) Act 1997* introduces a new regime governing access to services in the telecommunications industry. A key component of this regime is the pricing of access which, in part, is to be administered by the Australian Competition and Consumer Commission. The purpose of this document is to outline the approach the Commission will adopt, in the usual case, when considering access pricing issues under Part XIC.

A draft of this document was released for public comment in February 1997 and a public forum was held in April 1997. The Commission wishes to thank all parties who made submissions or participated in the public forum. This document reflects the Commission's views after consideration of all relevant submissions and representations.

The Commission also wishes to thank AUSTEL, Treasury, the Department of Communications and the Arts and the Bureau of Transport and Communications Economics for their assistance in preparing this document. The views expressed in this document are those of the Commission.

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Chapter 1

Introduction

Under Part XIC of the *Trade Practices Amendment (Telecommunications) Act 1997*, the Australian Competition and Consumer Commission must, among other tasks:

- approve (or otherwise) the Telecommunications Access Forum (TAF) access code which may include the model terms and conditions for access to declared telecommunications services;[1]
- approve (or otherwise) undertakings submitted by access providers which may include the terms and conditions of access to declared telecommunications services; and
- arbitrate disputes between parties concerning the terms and conditions of access to declared telecommunications services.[2]

These tasks involve approving or determining a price for a declared service, or a method for ascertaining a price. The purpose of this document is to inform industry, government and other interested parties of the principles that will guide the Commission when considering access pricing issues for declared services under Part XIC. It is envisaged these principles will assist the TAF in developing an access code and assist access providers in developing undertakings. Further, although these principles are not intended to unreasonably limit the outcomes of commercial negotiations, an indication of the approach the Commission will take in arbitrating disputes may assist parties in commercial negotiations by narrowing the boundaries for those

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1 Declared services are services declared under Part XIC. Refer to s. 152AL of the }{\plain \i\f1 Trade Practices Amendment (Telecommunications) Act 1997}{\plain \f1 .

2 Under the }{\plain \i\f1 Telecommunications Act 1997}{\plain \f1 , the Commission also has responsibilities to arbitrate disputes over the terms and conditions for matters such as preselection and number portability. At this stage the Commission has not determined its approach to such matters.

negotiations. For the same reason, these principles may also be a useful tool in alternative dispute resolution processes.

The discussion of the pricing principles is divided into three parts.

First, broad pricing principles consistent with the legislative criteria under Part XIC are provided. The Commission will apply these principles to declared services that are well-developed and necessary for competition in dependent markets, and where the forces of competition (or the threat of competition) work poorly in constraining pricing outcomes. It is expected that the prices in undertakings and determined by the Commission when arbitrating disputes will, in the usual case, be consistent with these principles. The major principle is that an access price should be based on the cost of providing the service.

Second, a number of guides that will be useful in determining whether prices are consistent with these principles are detailed. Determining whether a price is consistent with the broad principles can be problematic, costly and time consuming. The primary purpose of these guides is to provide parties with some assistance in developing undertakings. They may also be used by the Commission to assist in determining prices in arbitrations. Compliance with these guides will not guarantee that a price will be approved by the Commission, nor will departure from them imply a price will not be approved. Rather, departure from these guides provides a signal that a price may be inconsistent with the pricing principles and will need to be examined carefully.

Third, the specific cost-based pricing methodology the Commission will employ, where appropriate, to determine a price is outlined. This includes the basic methodology and some of the issues that will usually need to be addressed in its implementation.

The pricing principles, pricing guides and specific cost-based methodology constitute the general approach the Commission currently intends to take. The Commission's approach to access pricing may not be static. Access pricing (and specifically the pricing of interconnection) in telecommunications is still a developing issue in Australia and overseas. This document reflects the Commission's approach based on experience to date.

Chapter 2

Legislative criteria

The object of Part XIC is to promote the long-term interests of end-users of carriage services or of services provided by means of carriage services (the **listed services**).[3] This will be achieved, in part, through establishing the rights of third parties to gain access to services which are necessary for competitive services to be supplied to end-users. This aims to promote the long-term interests of end-users by achieving the following objectives:

- promoting competition in markets for listed services;
- achieving any-to-any connectivity in relation to carriage services that involve communication between end-users; and
- encouraging the economically efficient use of, and the economically efficient investment in, the infrastructure by which listed services are supplied.[4]

An important part of the access regime is the **terms and conditions** of access (including the price or a method for ascertaining the price). Under Part XIC the Commission cannot approve a draft TAF access code or accept an undertaking unless satisfied that the terms and conditions specified are reasonable.[5] In determining whether terms and conditions are **reasonable**, regard must be had to the following matters:

- whether the terms and conditions promote the long-term interests of end-users of carriage services or of services supplied by means of carriage services;

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3 Section 152AB (1) of the Act.

4 Section 152AB (2) of the Act.

5 The Commission must also ensure that the terms and conditions in the TAF access code, in undertakings and any arbitration determination, are consistent with any Ministerial pricing determination in place. See s. 152CH of the Act.

- the legitimate business interests of the carrier or carriage service provider concerned, and the carrier's or provider's investment in facilities used to supply the declared service concerned;
- the interests of persons who have rights to use the declared service concerned;
- the direct costs of providing access to the declared service concerned;
- the operational and technical requirements necessary for the safe and reliable operation of a carriage service, a telecommunications network or a facility; and
- the economically efficient operation of a carriage service, a telecommunications network or a facility.[6]

This does not, by implication, limit the matters to which regard may be had.[7]

When arbitrating access disputes the Commission must have regard to the same matters. In addition, the Commission must take into account in making a determination:

- the value to a party of extensions, or enhancement of capability, whose cost is borne by someone else.[8]

The criteria above are interdependent. In some cases promoting one criterion will promote another. In other cases, the criteria are conflicting. For example, telecommunications is an industry where the delivery of many services is characterised by economies of scale and scope. Therefore, a central dilemma which must be confronted is that an access price that promotes the economically efficient use of infrastructure in the short term may, in some cases, not encourage efficient investment in infrastructure and may not be consistent with the legitimate business interests of the access provider. In particular, an access price based on the direct incremental cost of providing access may not always allow an efficient access provider to recover all its costs over the long term.

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6 Section 152AH (1) of the Act.
7 Section 152AH (2) of the Act.
8 Section 152CR (1) (e) of the Act.

In addition to promoting the economically efficient use of, and investment in, infrastructure, the access regime established by Part XIC attempts to open up to competition markets which are potentially competitive but where the scope for competition depends on the services of bottleneck facilities.[9] The access price should allow more efficient sources of supply to displace less efficient sources within these potentially competitive markets. However, the access price should also allow vertically integrated firms to exploit economies of scale and scope to deliver services to end-users at least cost.

Further, access prices and the processes of competition which Part XIC harnesses should encourage suppliers to produce the kinds of services most highly valued by end-users, improve customer choice of services and service quality, and supply services in the least-cost way.

The discussion below interprets the legislative criteria above and draws implications for access pricing in light of this discussion.

Long-term interests of end-users

The long-term interests of end-users will, in general, be promoted by lower prices (that are sustainable), higher quality of service and greater choice of products. These outcomes will be promoted by:

- competition in markets for telecommunications services;
- any-to-any connectivity; and
- encouraging the economically efficient use of, and investment in, telecommunications infrastructure.

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9 A bottleneck facility is used to provide services that are necessary inputs for firms to supply in dependent (upstream or downstream) markets. A bottleneck facility is usually uneconomic or impossible to duplicate. As such, there is scope for the owner of a bottleneck facility to reap abnormally high profits through restricting the supply of services from the infrastructure or demanding monopoly rents for use of that facility, thereby reducing competition in dependent markets.

Promoting competition in markets for telecommunications services

Part XIC is concerned with opening up to competition potentially competitive markets that are dependent on the services of telecommunications infrastructure (dependent markets).[10] Where existing conditions do not already provide for the competitive supply of these services, Part XIC (including the pricing of access) aims to facilitate access to these services to encourage the efficient entry of firms and efficient competition in dependent upstream or downstream markets.

Any-to-any connectivity

Any-to-any connectivity is the ability of end-users of different networks to communicate. In addition to the benefit of allowing users of one network to communicate with users of other networks, any-to-any connectivity has important implications for competition in the provision of carriage services.

It is a common feature of telecommunications networks that the value of the network to an end-user depends on the number of other users that network allows the end-user to reach. For providers of network services to compete effectively they will, in most cases, require access to other networks to provide services to end-users. In effect, if smaller networks could only offer services to their own end-users they would find it difficult to attract new users, regardless of their long-term efficiency.

Access prices should not artificially discriminate against the users of any particular network in the provision of any-to-any connectivity and should encourage operators of different networks to configure their networks to promote any-to-any connectivity.

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10 The Act was established, in part, from the recommendations of the Hilmer Report. See Hilmer, F., Rainer, M. and Taperall, G., }{\plain \i\f1 National Competition Policy,}{\plain \f1 Report by the Independent Committee of Inquiry, August 1993. This report emphasises the role of competition in promoting the economically efficient use of society\'92s resources (p. 6).

Encouraging economically efficient use of, and investment in, telecommunications infrastructure

The economically efficient use of, and investment in, infrastructure comprises three (interdependent) elements.

Dynamic efficiency — Firms have the appropriate incentives to invest, innovate, improve the range and quality of services, increase productivity and lower costs through time.

Productive efficiency — Firms have the appropriate incentives to produce services at least cost, and production activities are distributed between firms such that industry-wide costs are minimised.

Allocative efficiency — Firms employ resources to produce goods and services that provide the maximum benefit to society. An important condition for allocative efficiency is that prices for services at least reflect the value society places on the next best alternative use of the resources used to produce the service.[11]

The relationships between an access price and each of these elements are multi-faceted. Some of the more important issues to consider are described below.

Usually, dynamic and productive efficiency will be promoted by an access price that facilitates entry and competition in the supply of services in dependent markets. It is widely held that competition (or the threat of competition) is the most effective way of encouraging firms to innovate, improve their productivity, minimise their costs of production and improve the range and quality of their services. Care must be taken, however, to ensure that an access price promotes efficient entry. An access price should be low enough to allow greater product differentiation and choice, and to sustain the long-term viability of firms that produce high quality services at least cost in dependent markets. However, the access price should not be artificially low so as to allow inefficient

11 For example, it would be allocatively inefficient for resources to be devoted to producing telecommunications services that society places a low value on, to the detriment of foregoing other services (including other telecommunication services) that society desires highly.

high-cost firms to remain viable in the long term. A price that is artificially low may also result in the running down of infrastructure, which in the long term may not be in the interests of end-users. It may also discourage efficient investment in infrastructure.

Dynamic efficiency will also be promoted by an access price that provides a normal commercial return on investments and does not distort the 'build or buy' decision. To encourage efficient investment in infrastructure (in the long term), an access price should be sufficient to cover the prudently incurred costs of providing infrastructure including a normal commercial return on investment.[12] Furthermore, an access price should not distort the decision of new or existing firms to buy existing network capacity or build their own network capacity. This decision must be based on normal commercial factors, taking into consideration the economies of scale and scope inherent in existing networks.

Productive efficiency will be promoted by an access price that allows for the more efficient sources of supply to displace the less efficient. The delivery of final telecommunications services often involves value-added production at a number of different stages often in potentially competitive markets. An access price which encourages the entry of lower-cost (or higher quality) firms within these potentially competitive markets will promote productive efficiency throughout these integrated production chains. In addition, access providers should have incentives to adopt the most appropriate technology, improve productivity and reduce costs.

Allocative efficiency consists of a number of components. First, infrastructure should not be under- or over-utilised. Services to end-users should be produced so long as the value of society's resources used to provide those services does not exceed the value of the services to the users. For example, an access price above the cost of providing the service will most often result in an under-utilisation of the infrastructure. Second, an access price should minimise distortions in the

12 As discussed below, a normal commercial return may vary depending upon the nature of the assets used to provide the service.

use of infrastructure. An access price should not artificially bias the use of one technology over another in the provision of a service or the production of a particular service over another.

Legitimate business interests of the carrier or carriage service providers

Regard to the legitimate business interests of access providers requires an access price that at least provides a normal commercial return on prudent investment.[13] The services to which Part XIC will mostly apply are provided using highly capital intensive and specialised infrastructure, the costs of which are largely sunk before the service is provided. It is legitimate for the carrier or carriage service provider to seek to recover the costs of prudent investment from its commercial activities, including providing access.

However, it is unlikely the legitimate business interests extend to achieving a higher than normal commercial return through the use of market power.[14] For example, an access price should not, in most cases, be artificially inflated by the lack of competition in the supply of infrastructure services.

Interests of persons who have rights to use the declared service

The ability of an access seeker to compete in the supply of a service in a dependent market should be based on the cost and quality of its service relative to its competitors. For example, an access price should not artificially protect a vertically integrated access provider from being displaced by a more efficient access seeker in a downstream market.

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13 The Commission may also take into account access providers\'92 obligations to shareholders and other stakeholders.

14 Earning above a normal commercial return may be justified on other grounds. For example, it can be a legitimate reward for innovative investment or unique cost-cutting measures.

The direct costs of providing access

Direct costs are those costs necessarily incurred (caused by) the provision of access. As stated in the explanatory memorandum

> ... 'direct' costs of providing access are intended to preclude arguments that the provider should be reimbursed by the third party seeking access for consequential costs which the provider may incur as a result of increased competition in an upstream or downstream market. (*Trade Practices Amendment (Telecommunications) Bill 1996 Explanatory Memorandum* p. 44)

This requires that an access price should not be inflated to recover any profits the access provider (or any other party) may lose in a dependent market as a result of the provision of access. In particular the Efficient Components Pricing Rule (ECPR) may be inconsistent with this criteria. ECPR bases price on the incremental cost of providing the access service plus the opportunity cost of losing business in related markets.

This criterion also implies that, at a minimum, an access price should cover the direct incremental costs incurred in providing access. It also implies that the access price should not exceed the stand-alone costs of providing the service.[15]

Operational and technical requirements necessary for the safe and reliable operation of a carriage service, a telecommunications network or a facility

An access price should not lead to arrangements between access providers and access seekers that will encourage the unsafe or unreliable operation of a carriage service, telecommunications network or facility.

The economically efficient operation of a carriage service, a telecommunications network or facility

This criterion is similar to productive and allocative efficiency described above. An access price should encourage access

15 Stand-alone costs are the costs an access provider will incur in producing a service assuming the access provider produced no other services.

providers to select the least-cost method of providing the service and provide those services most highly valued by access seekers.

Value to a party of extensions, or enhancement of capability, whose cost is borne by someone else

This criterion requires that if an access seeker enhances the facility to provide the required services, the access provider should not attempt to recover for themselves any costs related to this enhancement. Equally, if the access provider must enhance the facility to provide the service, it is legitimate for the access provider to incorporate some proportion of the cost of doing so in the access price.

Chapter 3

Framework for establishing pricing principles

These access pricing principles presume a fully effective declared services regime, together with a fully effective approach to service definition. The Commission notes that much progress has been made in this regard by the TAF and in the Commission's *Deeming of Telecommunications Services*.[16]

Within the set of declared services, the Commission considers that these pricing principles are appropriate for certain services.

First, the service must be necessary for competition in dependent (upstream or downstream) markets. Access to these services is required for firms to supply in competitive or potentially competitive markets.

Second, the service must be supplied in markets where the forces of competition, or the threat of competition, work poorly to constrain the price of access to efficient levels. A benchmark for an efficient price is the price that would occur, given the characteristics of the market, if the access provider faced effective competition. A number of characteristics may cause competition to work poorly, including where it is uneconomic to duplicate the facility providing the service,[17] where there are large sunk costs associated with entering the market, or where market characteristics are such that it is only efficient for a few firms to supply.[18]

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16 Separately the Commission is developing criteria it will use when undertaking a public inquiry for declaration of services pursuant to s. 152AL of the Act.

17 Often called a natural monopoly where one firm can supply market demand more cheaply that any combination of firms.

18 For example, where the economies of scale in the supply of the service are large relative to the size of market demand.

Finally, the service must be well developed in the market and have established demand characteristics. The pricing principles may not be as appropriate for new services which are not well developed or for which there is a high degree of risk associated with uncertainty about demand.

The approach to determining if the forces of competition are working poorly may differ from case to case. However, the Commission may examine international benchmarks, the pricing behaviour in the market or structural characteristics in the market to assist in determining whether competitive forces are constraining prices to efficient levels.

The Commission will consider whether the pricing principles will apply to particular declared services on a case-by-case basis. It is possible that services will be declared (to achieve any-to-any connectivity for instance), but may not fit into the class of services described above.

The Commission will consider whether the pricing principles apply to particular declared services on a case-by-case basis. In general they will apply to declared services:

- that are necessary for competition in dependent markets;
- where the forces of competition, or the threat of competition, work poorly to constrain the price of access to efficient levels; and
- that are well developed in the market.

Chapter 4

Broad pricing principles

An access price consistent with the legislative criteria is difficult to determine *ex ante*. The approach adopted by the Commission to guide it when performing its access pricing functions under Part XIC is to consider the constraints that would be placed on the pricing behaviour of access providers if they faced effective competition (given the characteristics of the market). Specifically prices should be consistent with the levels that would occur if the access provider faced the threat of being displaced as a supplier.[19]

This yields four broad principles. These principles aim to assist in redressing any unequal bargaining power inherent in commercial negotiations over access. In usual commercial negotiations there are mutual benefits from trade. However, in negotiations over access small network operators seeking access usually have much to lose in not gaining access. The four pricing principles, that will be used by the Commission in assessing undertakings and in arbitrations, aim to assist in re-balancing any unequal bargaining power.

Access prices should be cost based

The price of a service should not exceed the **minimum costs an efficient firm will incur in the long run in providing the service**. The relevant costs are the economic costs of providing the service.[20] These are the on-going (or forward looking) costs of providing the service, including a normal commercial return on efficient investment.

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19 This does not imply that the Commission believes the market for declared services is or should be perfectly competitive. Nor does the Commission expect access prices to replicate the outcomes that would occur if the market was perfectly competitive.

20 If there are short-run capacity constraints prices could rise to ensure that services go to the highest-valued uses. However, access prices should not provide incentives for access providers to artificially constrain capacity to earn excess profits.

Access prices should not discriminate in a way which reduces efficient competition

An access price should not have the effect of reducing efficient competition. In particular, access prices should allow more efficient sources of supply to displace less efficient sources of supply in dependent markets.

This principle does not imply that all access seekers should pay the same access price. Commercially determined prices can differ across buyers for a range of reasons. Demand patterns may generate different prices, as may factors that generate differences in the economic costs of supplying different buyers.[21]

However, differential pricing can reduce efficient competition. Preferential access pricing between a limited group of network operators can have the effect of discouraging entry of more efficient operators.[22] Differential pricing can also discourage investment. In an industry where assets often have little alternative use, there is scope for an access provider to appropriate the commercial returns to the assets of access seekers through high access prices.[23]

There appears to be even greater scope for differential pricing to reduce efficient competition where an access provider provides preferential pricing to its own vertically integrated operations or to its subsidiaries or associates. The incentive for the access provider to discriminate against competitors can inhibit efficient entry and competition in those markets.

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21 The costs of supplying different access seekers may vary for a number of reasons including differences in the volume of the service purchased; differences in the duration and/or frequency of access agreements; risk-sharing associated with long-term or fixed volume/capacity agreements; collateral benefits provided by the access seeker (for example through stimulating extra demand for the access provider\'92s network services during periods of, or on routes with, idle capacity); and differences in credit worthiness.

22 For example, preferential interconnect pricing between two large network operators may prevent smaller operators competing and have the effect of establishing or maintaining a duopoly.

23 As the access seeker will need the access service to make these assets productive, there is scope for the access provider of a bottleneck facility to charge high prices for access.

The Commission expects that in most undertakings the same menu of offerings will be available to all access seekers on a non-discriminatory basis. Where an undertaking provides scope for differential pricing not based on costs, the Commission must be satisfied that such differential pricing will promote competition and will enhance the efficient use of, and investment in, infrastructure.

As discussed below, when arbitrating disputes, the Commission will use a cost-based approach. As such, differences in prices across the Commission's arbitration determinations will be based solely on differences in costs.

Access prices should not be inflated to reduce competition in dependent markets

An access provider facing effective competition will not be able to inflate the access price with the aim of reducing competition in dependent markets.

Access prices should not be predatory

If the forces of competition (or threat of competition) work effectively, an access provider will not be able to successfully predatory price. A predatory price is a price below the incremental cost of production with the aim of reducing competition or discouraging entry into the market (with the objective of pricing above cost once the competition has been removed).

Broad pricing principles and the legislative criteria

These broad pricing principles are important for achieving an access price consistent with the legislative criteria.

Promoting competition in markets for telecommunications services

An access price consistent with these principles will promote competition in dependent telecommunications markets. As the price will be based on the cost of providing the service and will not discriminate between access seekers to reduce competition, it will encourage efficient entry and exit in

dependent markets. The least-cost access seekers will be viable in the long term in dependent markets allowing greater product differentiation and choice.

Any-to-any connectivity

As an access price consistent with these principles will be cost based, it will assist in balancing any unequal bargaining power between network operators when determining terms and conditions of access to each other's networks. This will promote any-to-any connectivity and, as such, enhance competition in the provision of carriage services.

Encouraging economically efficient use of, and investment in, telecommunications infrastructure

An access price consistent with these principles will also encourage the efficient use of, and investment in, infrastructure.

Dynamic efficiency

An access price consistent with these principles will promote dynamic efficiency by encouraging efficient investment decisions. Such a price provides a normal commercial return on prudent investment and rewards good investment decisions over poor investment decisions. This will encourage efficient levels of investment and provide incentives for access providers to provide due consideration to the choice of technology embodied in the investment undertaken. It also encourages efficient 'build or buy' decisions. The decision of an access seeker to 'build or buy' should be based on the relative cost of the two options. An access price consistent with these principles will reflect the value of the society's resources used in the production of the service (in the long run). Therefore efficient by-pass, based on such a price, can occur if access seekers can provide the service at lower resource cost.

Finally, by promoting competition in dependent markets, the access price will provide the pressure for firms in that market to innovate and to continually improve the range and quality of their services.

Productive efficiency

An access price consistent with these principles will also promote productive efficiency. As the price will be based on the cost of providing the service using the most efficient means commercially available it will encourage access providers to continually improve their performance with the aim of achieving best practice and lowering cost. The competitive pressure generated in dependent markets will also encourage firms to improve productivity and reduce costs.

Allocative efficiency

As the access price will be cost based it will usually reflect the value of society's resources consumed in providing the service and hence promote allocative efficiency. An access price reflecting this value will encourage the provision of services to end-users so long as the end-user values the service more highly than the cost to society of providing it. These principles will also prevent network operators inflating the price of access to each other's networks which has the potential to increase prices to end-users above cost and result in an under-utilisation of these networks as a whole.

Legitimate business interests of the carrier or carriage service providers

As an access price consistent with these principles allows efficient access providers to recover their costs of production it will not violate their legitimate business interests.

Interests of persons who have rights to use the declared service

As an access price consistent with these principles will not discriminate to reduce efficient competition or be inflated to reduce competition in dependent markets, the long-term viability of the access seeker will depend upon the relative quality and cost of the service it provides in that market.

The direct costs of providing access

As the access price will be cost based it will not be inflated by the market power of the access provider.

The Commission considers an access price that is inconsistent with the outcome that would occur if there was effective competition in the provision of the access service will not in most instances be consistent with the legislative criteria. As such the Commission is unlikely to approve a price in an undertaking, or determine a price in an arbitration, that it considers:

- is not based on the cost of providing the service;
- discriminates in a way which reduces efficient competition in dependent markets;
- is inflated to reduce competition in dependent markets;
- is predatory.

If any access price is inconsistent with any of these principles the Commission will need to be satisfied that the price is consistent with the legislative criteria as set out in Chapter 2.

Chapter 5

Pricing guides

In reality it is difficult, time consuming and costly to determine whether a price is cost based, discriminates to reduce efficient competition, is inflated to reduce efficient competition or is predatory. The aim of this section is to provide a set of readily observable pricing guides consistent with the broad principles. The guides involve comparisons between access prices and observable (or potentially observable) prices and are designed to provide parties with further assistance in developing undertakings. If a price in an undertaking is inconsistent with the guides, it will signal to the Commission that it may be inconsistent with the pricing principles and the legislative criteria under Part XIC, and will need to be examined carefully. These guides will also be taken into account by the Commission in arbitrations, and are thereby expected to assist parties in commercial negotiations.

In interpreting these pricing guides a number of matters should be kept in mind.

First, these guides are by no means an exhaustive list of the matters the Commission may take into consideration when assessing an undertaking. Rather, they are a preliminary set of checks the Commission will generally use in assessing undertakings. Compliance with the pricing guides does not imply a price will automatically be approved by the Commission.

Second, the guides do not necessarily have universal application. It is possible that in some cases few or none of the guides will be appropriate. Departure from the pricing guides does not imply that the access price will not be approved in an undertaking.

Third, although these guides should provide useful boundaries within which commercial negotiations can take place, it is not intended that they inhibit those negotiations. In

particular these guides should not be interpreted as *per se* rules.

1. Comparison of an access price and the access provider's internal transfer price for the same or similar service

Comparing the access price with the access provider's price to its own vertically integrated operations (internal transfer price) can be useful in a number of respects.

First, comparing an access price to the internal transfer price (if observed or estimated) can assist in assessing whether the access price is cost based.[24] On the basis that the downstream operation of the firm is making a normal commercial return (over the medium term) the internal transfer price may provide an indicative estimate of the cost to the access provider of supplying the access service.[25] In making such a comparison, it is important to take into consideration any differences in the economic cost the access provider incurs in supplying its own operations and other parties. Differences could arise, for example, from lower transaction costs of exchange through internal contracting. Part XIC allows a vertically integrated firm to exploit such economies of scale and scope, and charge itself a different price on that basis.

Second, comparing the internal transfer price and the access price can be useful in detecting whether the access price may discriminate in a way to reduce efficient competition in dependent markets. As indicated above, there may be incentives for an access provider to provide preferential pricing to its own vertically integrated operations which may have the effect of reducing such efficient competition. Determining the extent to which any difference between the internal transfer price and an access price is not explained by differences in the economic cost of supplying the service can

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24 Internal transfer prices can be somewhat arbitrary and the Commission will need to be satisfied that any internal transfer price reflects the economic costs of providing the access service.

25 The return made by the downstream operations will depend upon the internal transfer price. If the firm continues to operate the downstream activities at below a normal commercial return it may imply the internal transfer price is above cost.

be a useful step in determining whether the access price discriminates to reduce competition in dependent markets.

If the access price available to third parties is greater than the access provider's price to its own vertically integrated operations, the Commission will need to be satisfied that the difference is consistent with the legislative criteria. One reason that may justify a higher price to competitors is differences in the economic costs of supply.

2. Assessment of changes of access prices over time

In assessing an access price in an undertaking or making a determination in an arbitration, the Commission may compare the price to prices in previous undertakings or arbitrations for the same or similar services. Given that prices in previous undertakings or arbitrations will have been determined as reasonable, the Commission may consider whether any change in the access price (or the absence of any change) is reasonable based on an examination of the sources of the change.

There are many legitimate commercial reasons why prices vary over time. Changes in the costs of producing the service will most often result in changes in prices, as will fluctuations in demand.[26] Prices will also change in response to greater competition in the supply of the service.

However, an access price should not usually change in direct response to changes in competition or prices in dependent markets. In particular, the access price should not increase in response to a lowering of competitors' costs in a dependent market or changes in the level of competition in that market.

In assessing an access price the Commission will usually compare the price to the price of the same or similar services specified in previous undertakings or determined in arbitrations. In doing so the Commission will assess whether any changes over time in the access price (or the absence of a

26 Fluctuations in demand may result in firms pricing at short-run incremental cost for limited periods. Prices may then rise as demand increases to allow firms to recover all their costs.

change) are reasonable from an examination of the possible sources of change.

3. Comparison of access prices and retail prices

Comparing an access price with the access provider's own retail prices may be useful in a number of respects.

First, in the absence of regulatory constraints on the retail price, the cost of an access service used as an input into the access provider's downstream retail operations can be expected to be lower than the price for the retail service. The retail price net of any costs the access provider avoids when it does not supply in the downstream market (avoided costs) will generally provide an upper limit to the cost of providing access.[27] In making such comparisons the appropriate retail price should exclude short-term discounts used to promote the product or special offers.

Second, if the access price exceeds the retail price (net of the avoided costs), it may indicate that the access price is inflated and may reduce competition in dependent markets.

In assessing an access price the Commission will usually compare the price to the access provider's own retail prices. If the access price exceeds the retail price (net of the costs the access provider would avoid in not supplying in the downstream market), the Commission will need to be satisfied that the difference is consistent with the legislative criteria.

4. Comparison with other observed access prices

In assessing an access price the Commission will usually compare the price to the current prices of other access services. This may involve comparing the access price to the prices of like services, as well as assessing the difference between the access price and the prices of more bundled or less bundled services. These comparisons may assist the Commission in assessing whether the access price is cost

27 This is based on the principles of competitive parity. See Kahn, A. E. and Taylor, W. E. (1994) \'91The Pricing of Inputs Sold to Competitors: A Comment\'92, }{\plain \i\f1 Yale Journal on Regulation}{\plain \f1 , 171, pp. 225\'96240.

based, or whether it discriminates or is inflated to reduce efficient competition in dependent markets.

If there are differences in the prices of like services, the Commission will examine the sources of these differences. There are reasons for different prices for the same service.[28] However, the Commission will need to be satisfied that any such difference is consistent with the legislative criteria.[29]

The Commission may also compare the access price to the prices of more bundled services. If the price of any unbundled access service is greater than the price of the bundled service (less the cost of bundling the service or plus the cost of unbundling the service) it may indicate that the access price is not cost based and/or has the effect of reducing competition in dependent markets.

Similarly the Commission may compare the price of a bundled access service to the sum of the prices of its unbundled elements. An access price for a bundled service that is greater than the sum of the prices of the unbundled services may indicate the access price is not cost based.[30]

In assessing an access price, the Commission will usually compare the price to the prices of:

- *similar services;*
- *more bundled services; and*
- *unbundled elements of the service.*

In the usual case the price of:

- *like services should be similar;*
- *an unbundled service should be below the price of a bundled service;* and
- *a bundled service should be similar to the sum of the prices of the unbundled services.*

28 For example differences in volume purchased.

29 One circumstance likely to require examination by the Commission is if price differences are based on differences in the technology used to supply the same service.

30 Potentially, bundling may have costs attached to it which could be recouped through the access price.

The Commission will examine the sources of any differences from these expectations when assessing whether the access price is consistent with the legislative criteria.

To assist parties in developing undertakings and to identify matters the Commission will take into account in an arbitration (and thereby assist parties in commercial negotiations), the Commission has developed a number of pricing guides. Although compliance with these guides does not guarantee a price that is consistent with the legislative criteria, departures from any of the guides will signal to the Commission that the price may be inconsistent with the criteria. The guides are:

1. If the access price available to third parties is greater than the access provider's price to its own vertically integrated operations, the Commission will need to be satisfied that the difference is consistent with the legislative criteria. One reason that may justify a higher price to competitors is differences in the economic costs of supply.

2. In assessing an access price the Commission will usually compare the price to the price of the same or similar services specified in previous undertakings or determined in arbitrations. In doing so the Commission will assess whether any changes over time in the access price (or the absence of a change) are reasonable from an examination of the possible sources of change.

3. In assessing an access price the Commission will usually compare the price to the access provider's own retail prices. If the access price exceeds the retail price (net of any costs the access provider would avoid in not supplying in the downstream market), the Commission will need to be satisfied that the difference is consistent with the legislative criteria.

4. In assessing an access price, the Commission will usually compare the price to the prices of:

- similar services;
- more bundled services; and
- unbundled elements of the service.

In the usual case the price of:

- like services should be similar;
- an unbundled service should be below the price of a bundled service; and
- a bundled service should be similar to the sum of the prices of the unbundled services.

The Commission will examine the sources of any differences from these expectations when assessing whether the access price is consistent with the legislative criteria.

Chapter 6

Implementation of cost-based pricing

When arbitrating disputes on access prices, and where necessary when approving undertakings, the Commission will in general need to be satisfied that the access price is based on the cost of providing the service. Determining a cost-based price involves identifying which costs to include and establishing and verifying the size of these costs.

The aim of this section is to outline the methodology the Commission will employ, where appropriate, in determining a cost-based price. The Commission does not, at this stage, consider it advisable to specify cost-based pricing methodologies for all declared services. As stated above, the methodology detailed below is intended to apply to services that are well developed (such as many of those in existing access agreements), that are necessary for competition in dependent markets, and where the forces of competition or the threat of competition work poorly in constraining prices to efficient levels. The Commission will consider the pricing of other declared services on a case-by-case basis. Two classes of services warrant particular mention.

First are access services that are new and hence are not fully developed. It is difficult to determine a pricing approach for these services without fuller knowledge of their capabilities and the cost structure required to produce them.[31]

Second are those access services where the forces of competition (or the threat of competition) constrain prices to efficient levels. The Commission is of the opinion that in most cases the prices of these services are likely to be cost based. However, it also recognises that commercial negotiation is

31 For example, if the service is based on a high degree of innovation other approaches may more accurately estimate the return required to compensate the investor for the high degree of risk associated with such activities.

the most reliable approach to achieving a price consistent with the relevant cost of providing the service. As such the Commission may not use the cost-based methodology if required to arbitrate disputes for these services.

Which cost-based approach?

There are many variants of cost-based pricing depending upon the costs that are included, how they are allocated and how they are measured (particularly common costs and capital costs).[32] The Commission's view is that for the types of services mentioned above, the access price should, in general, be based on the total service long-run incremental cost (TSLRIC) of providing the service.[33]

TSLRIC is the incremental or additional costs the firm incurs in the long term in providing the service, assuming all of its other production activities remain unchanged. It is the cost the firm would avoid in the long term if it ceased to provide the service. As such, TSLRIC represents the costs the firm necessarily incurs in providing the service and captures the value of society's resources used in its production.

TSLRIC consists of the operating and maintenance costs the firm incurs in providing the service, as well as a normal commercial return on capital. TSLRIC also includes common costs that are causally related to the access service. Some of the measurement issues that must be addressed in implementing TSLRIC, including the inclusion and allocation of common costs, are detailed in Appendix 2.[34]

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32 These variants include directly attributable incremental costs (DAIC), fully distributed costs (FDC), short-run incremental costs (SRIC), long-run incremental costs (LRIC), etc.

33 There may be exceptions to this. For example, there may be circumstances where a service has a limited time horizon. In such cases other pricing approaches may be more appropriate. Further, if the Commission arbitrates a dispute when an undertaking given by the access provider is in operation it must not make a determination that is inconsistent with that undertaking (see s. 152CQ(5) of the Act). However, in general, the Commission expects TSLRIC to be consistent with the terms and conditions in undertakings.

34 Flexibility in the implementation of the TSLRIC methodology means it could be consistent with a range of pricing outcomes that could occur under the pricing principles detailed earlier.

TSLRIC is based on forward-looking costs. These are the ongoing costs of providing the service in the future using the most efficient means possible and commercially available. In practice this often means basing costs on the best-in-use technology and production practices and valuing inputs using current prices. [35, 36]

An access price based on TSLRIC is consistent with the price that would prevail if the access provider faced effective competition, and usually best promotes the long-term interests of end-users.

First, TSLRIC encourages competition in telecommunications markets by promoting efficient entry and exit in dependent markets. TSLRIC is the long-term cost a vertically integrated access provider would need to recover from supplying services to its own downstream operations to remain viable. As such, access prices based on TSLRIC will encourage the entry and long-term viability of the most cost-efficient firms in dependent markets and allow product differentiation and greater choice. Higher cost firms will not remain viable.

Second, TSLRIC encourages economically efficient investment in infrastructure. As TSLRIC provides for a normal commercial return on efficient investments in infrastructure (in the long term) it provides the appropriate incentives for future investment. It also promotes efficient 'build or buy' decisions. Decisions of access seekers to build by-pass

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35 Best-in-use technology may often be best-in-commercial-use. This may exclude unique production technologies and practices specific to one firm.

36 In most cases, using forward-looking rather than historic costs will result in the more efficient use of, and investment in, infrastructure. Historic costs guarantee a normal commercial return to the access provider independent of the quality of its investment decisions. Cost valuation based on the best-in-use technology (rather than historical costs) provides stronger incentives for appropriate investment decisions through rewarding/penalising the access provider for good/poor investment decisions. Using historic costs also increases the scope for access providers to shift costs from competitive segments of the market to less competitive segments. This can deter entry and inhibit efficient competition in dependent telecommunications markets. Finally, efficient \'91build or buy\'92 decisions will be based on whether a firm can provide the service at a lower cost using the best-in-use technology. As historic costs may not represent costs using the best-in-use technology, access prices based on these costs may result in inefficient \'91build or buy\'92 decisions.

infrastructure will be based on the relative resource cost of doing so.

Third, in the long term TSLRIC provides for the efficient use of existing infrastructure. An access price based on TSLRIC signals the long-term value of the resources embodied in that service. As such access seekers will not purchase the service unless they value that service at greater than the long-run cost. This promotes the allocatively efficient use of infrastructure.[37]

Fourth, TSLRIC provides incentives for access providers to minimise the costs of providing access. The TSLRIC methodology uses the most efficient technology that is **commercially available**. In estimating TSLRIC the Commission will not use experimental prototypes as a benchmark for best-in-use technology. Rather it will use the best-in-use technology compatible with the existing network design. This in-built benchmarking ensures that if a firm does not adopt best-in-use technology it cannot expect to recoup any inefficiencies in production through access prices. Conversely, if a firm engages in unique cost-cutting measures, adopts more efficient production technologies or practices than that commercially available or undertakes innovative investment it will be appropriately rewarded.

Fifth, TSLRIC, by allowing efficient access providers to fully recover the costs of producing the service, promotes the legitimate business interests of the carrier or carriage service provider providing access.

Finally, TSLRIC protects the interests of persons who have rights to use the declared service. As TSLRIC is the long-run cost the access provider incurs in providing the service to its own vertically integrated operations, it inhibits the access provider discriminating in favour of one access seeker over another (unless based on differences in costs). As a result, the ability of an access seeker to compete in dependent markets will be based on the quality and cost of its operations relative to its competitors.

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37 In the short run some costs are sunk and the cost (opportunity cost) of resources used to produce a service may be below TSLRIC. While pricing access at this cost may promote short-term allocative efficiency, it may not in the longer term encourage efficient investment.

Approaches to estimating TSLRIC

Estimating or determining TSLRIC can be difficult and time consuming. Most often costs are recorded and measured in an accounting framework and do not correspond to the economic costs underlying TSLRIC. Accounting costs are largely a record of previously incurred or embedded costs which do not necessarily represent the forward-looking or ongoing costs of providing the service using the most efficient means commercially available. Furthermore, it can be difficult in an accounting framework to identify the source of many costs and allocate them to a particular service.

There are two main approaches available to the Commission to estimate TSLRIC. The first is to use existing access prices that are consistent with TSLRIC as a base and alter the price in accordance with subsequent changes in costs (delta approach). The second is a cost study involving the identification, measurement and verification of all the relevant costs (full-cost approach). Both approaches have strengths and weaknesses in particular circumstances. The Commission envisages that in an arbitration it will initially decide whether there is an appropriate benchmark for the delta approach. If not it will generally use the full-cost approach. In either case the Commission may also use the pricing guides (detailed in Chapter 5) to assist in determining TSLRIC.

Delta approach

The delta approach involves using existing access prices as a benchmark and altering the price in accordance with subsequent and projected changes in costs. This approach takes into consideration factors such as technological improvements, improvements in productivity, changes in wages and the prices of equipment that may alter TSLRIC over the period since the access price was determined. The Commission will need to be satisfied that the existing access price is based on TSLRIC before using the delta approach (see the discussion below).

The advantage of the delta approach is that it reduces the issues the access parties and the Commission must address. First, it is only necessary to examine the costs that are likely to

have changed since the existing access price was determined. Second, only estimates of the changes in the costs (rather than the levels) are required.

The major disadvantage of this approach is that the existing access price may not be consistent with TSLRIC. In such a case the delta approach will entrench an inappropriate price.

The Commission will consider using the delta approach on a case-by-case basis. This will primarily depend upon the Commission's view on whether the current access price is cost based and consistent with TSLRIC and whether it is likely that an estimate from a full-cost study will provide a superior estimate of TSLRIC.

One case where this may occur is when the TSLRIC of a service has been recently estimated using the full-cost approach and the Commission is satisfied that the cost estimated in that study is based on TSLRIC. This could include full-cost studies undertaken by the Commission or other parties.

The delta approach may be less applicable for new services or services using network elements that have not been the subject of full-cost studies. It may also be more advisable to undertake a full-cost study when there has been a large amount of change (particularly change in the technology used to provide the services) since the existing access price was established.

Existing access prices

Existing access prices that may be used as a benchmark for the delta approach are the current[38] Telstra-Optus interconnect prices for domestic PSTN originating access and domestic PSTN terminating access.[39] This interconnect price was initially determined by the Government on advice from AUSTEL. This was based on directly attributable incremental costs which AUSTEL interpreted as long-run incremental cost (LRIC). This approach was generally reflected in the

38 As at 30 June 1997.

39 See ACCC, }{\plain \i\f1 Deeming of Telecommunications Services}{\plain \f1 , 30 June 1997.

Interconnection and Related Charging Principles (IRCP). LRIC is similar to TSLRIC except the increment is for the size of the service demanded by the access seeker (rather than the whole service). As a result, LRIC will usually be lower than TSLRIC. Subsequent to the initial interconnect price, the parties negotiated an agreement where the price increased in part to reflect 'all relevant direct costs and a commercial return' as specified in the IRCP. There is some evidence that suggests this current price is cost based and may be similar to TSLRIC. However, the Commission has received a number of submissions which suggest the current Telstra-Optus interconnect price is an inappropriate benchmark for the delta approach.

Full-cost approach

As indicated above, a full cost study will involve the identification, measurement and verification of costs. These costs are the anticipated costs that will be incurred by an efficient access provider in producing the service into the future. Estimating TSLRIC requires a range of information including:

- operation and maintenance costs;
- costs of capital based on the best-in-use technology (this may or may not be the technology currently used by the access provider); and
- source and nature of any relevant common costs.

Sources of information

Although the information required to implement the delta approach is less burdensome, both approaches will require the measurement and verification of certain costs (or changes in costs). The Commission recognises that parties within the industry are best placed to provide this information.

When convincing the Commission that a price is based on TSLRIC, the access provider may need to justify to the Commission that each element of the costs are causally related to the provision of the service. That is, the cost would not be incurred if the service was no longer provided. The access provider may also need to justify the size of these costs

in terms of the best-in-use technology and production practices using current input prices.

Access seekers and other parties with specific information on cost structures and best-in-use technology are best placed to verify information on costs. The Commission, where appropriate, will seek information from these parties to assist in the verification of costs. These parties should recognise that this information is vital to ensure an access price is based on TSLRIC.

In addition to industry sources the Commission, where appropriate, will seek verification and benchmarking of costs from other sources, including information on access costs and prices observed in international markets.

Record keeping rules

Management accounting systems are often not designed to provide the required information and allocate costs in a manner to measure or estimate TSLRIC. In some cases more detail will be required on the source of costs and more direct allocation of costs to the provision of particular services. Further, as discussed in Appendix 2, the use of historic costs in asset valuation will not often reflect the most efficient forward-looking method of providing these services.

The Commission is currently developing record keeping rules consistent with these pricing principles to assist carriers and carriage service providers to provide the type of information that will be required. The Commission recognises that information systems will take time to develop. Pursuant to the legislation, current record keeping rules will be used in the interim.[40]

However, no matter what approach is used to estimate TSLRIC, in many cases the estimates will provide a range of prices. In such cases, the Commission will use, if appropriate, the pricing guides (detailed above) and benchmarks to further narrow the range, and where necessary to determine the

40 This is the Chart of Accounts/Cost Allocation Manual (COA/CAM) developed by AUSTEL.

price. Such benchmarks may come, for example, from international access prices, the prices of international by-pass of domestic services and other prices and costs observed in the domestic market.

The Commission does not consider it appropriate to specify for all declared services a methodology for determining an access price. However, in cases where the declared service is well developed, necessary for competition in dependent markets, and where the forces of competition or the threat of competition work poorly in constraining prices to efficient levels, the Commission will, in the usual case, when required to determine the access price, base such a determination on the total service long-run incremental costs (TSLRIC) of providing the service.

The Commission recognises that estimating TSLRIC is difficult, time consuming and subject to error. As a result it will, in the usual case, adopt one of two approaches to estimating TSLRIC. The first involves altering the existing access price on the basis of changes in costs. The second involves measuring the full cost of providing the service. Both approaches will require input from access providers, access seekers and other parties in the measurement and verification of the costs. In many cases estimates of TSLRIC may provide a range of prices. In such cases the Commission will use the pricing guides and benchmarks to further narrow this range and, where necessary, to determine the price.

Appendix 1

Definition of terms

Fixed costs — Those costs which are incurred in producing a service but do not vary with the output of the service. Fixed costs are avoided if the service is discontinued (e.g. a government license fee which is a necessary precondition for producing the service).

Common costs — Costs incurred with the production of multiple products or services that remain unchanged as the relative proportion of those products or services varies. If a cost is common with respect to a subset of services it is only avoided when each service within the subset is not provided. It is incurred if any one of the subset of services is provided, but is not causally attributable to any particular service within the subset. Common costs arise from the existence of economies of scope.

Sunk costs — Expenditure on production inputs such as plant and machinery which, once incurred, cannot be used for other purposes or resold (cannot be recouped). All sunk costs, once incurred, are fixed costs, but not all fixed costs are sunk.

Forward-looking economic costs (true economic cost) — Forward-looking economic costs are the prospective costs a firm would incur in producing a service using best-in-use technology and production practices. When calculating forward-looking costs, costs are usually valued at current prices.

Opportunity cost — What is foregone by employing resources in their current use rather than the most valuable alternative use.

Historical costs — The costs a firm has incurred in the past as recorded in the firm's accounting books. Historic costs bear no necessary relation to forward-looking economic costs.

Incremental costs — The additional costs a firm incurs from expanding the output of a service by a particular quantity assuming the firm's other services continue to be produced at existing levels. Incremental costs are forward looking in the sense that they measure the costs an efficient firm **would** incur if the output level increased by a given increment.

Stand-alone costs — The cost a firm would incur in producing a service assuming the firm produced no other services. Stand-alone costs are the maximum costs an efficient firm will incur in producing the service.

Economies of scale — A production process in which the average (or per unit) cost of production decreases as the firm's output increases.

Economies of scope — A production process in which it is less costly in total for one firm to produce two (or more) products than it is for two (or more) firms to each produce one of the products.

Long run — A period long enough such that all of a firm's costs (including sunk costs) become variable or avoidable.

Normal commercial return — A return on a firm's investment that is consistent with the return in the market for investments of similar risk. Of similar risk does not include diversifiable risk.

Predatory pricing — Pricing behaviour pursued by a firm with the purpose of reducing competition in the market. Predatory pricing involves pricing in the short term below cost to reduce competition in the market, with the objective of increasing the price above cost when competition has been weakened.

CAN (Customer Access Network) — The CAN is the key network element which lies between a network termination point at the customer's premises and the network switch at which, conceptually, an access seeker could establish a point of interconnection.

Appendix 2

Implementation and measurement of TSLRIC

Measuring TSLRIC is a difficult and time consuming exercise. Decisions about how to measure and allocate costs can potentially have as large an effect on the access price as the choice of pricing methodology. The aim of this appendix is to outline the implementation of TSLRIC and raise a number of the practical issues involved in its measurement.

TSLRIC is the forward-looking incremental cost of supplying the whole service when the other activities of the firm remain unchanged. It includes the costs an efficient firm would necessarily incur in providing the service, or alternatively the costs that would be avoided if the service was no longer provided in the long run.

TSLRIC is a long-run cost measure. The time horizon is sufficient so all necessary investments must be replaced. The cost of efficient forward-looking investment in long-lived assets required to produce network services is properly included in TSLRIC even if some or all of the investment will become sunk once in place.

The Commission will take into account the existing network design in determining TSLRIC. However, the extent to which the Commission will do so will be determined on a case-by-case basis, and will depend upon the nature of the declared service.

The costs that can be included in TSLRIC can be separated into operating costs, common costs and capital costs.

Operating costs

Operating costs are the ongoing operational costs of providing the service, including the labour and materials costs that are causally related to the provision of the service. This labour and materials would not be required if the firm ceased to provide the service.

Common costs

Common costs are the costs incurred in the provision of a group of services. These costs are incurred if any one of the services within the sub-group are produced and are not avoided unless the production of all the services cease. Such common costs often arise when different services use the same network element. For example, the costs of (non-usage based) maintenance of the CAN are common to the provision of local and long-distance calls.

In practice there are two types of common costs. Those that are not common to access services (e.g. retail and marketing costs), and those specific to a subset of services related to the provision of access services (e.g. a switch that is used to direct a variety of telecommunications traffic). As the first group of common costs are not causally related to the provision of access services they should not be recovered in access prices.

The second type of common costs are not incremental to a particular service in the sense that they are not avoided if the firm does not produce the service. However, they are incremental in the sense that they would need to be incurred by an efficient firm if the service was provided on a stand-alone basis. An efficient multi-product firm would have the expectation of recovering, in some manner, these common costs. As a result one may expect the prices of the firm's services (including pricing access) to incorporate some contribution to these costs.[41]

As common costs are not directly attributable to the production of any one service, the allocation of these costs across services is somewhat arbitrary. There is a range of possible methods of allocating common costs.[42] Whatever

41 Failing to account for these common costs could violate the legitimate business interests of the access provider, reduce incentives to maintain and invest in infrastructure and distort the choice of technology towards technologies with low common costs.

42 One commonly used approach is the \'91equi-proportionate mark-up over directly attributable costs\'92. This involves measuring the directly attributable costs (directly attributable costs exclude common costs) of each service within the group and allocating the common costs based on each service\'92s proportion of the total directly attributable costs.

approach is used, the Commission will need to be satisfied that the allocation of these costs is appropriate under the legislative criteria.

First, the total costs of providing the service should not exceed the stand-alone costs. The stand-alone costs are the costs that would be incurred in the provision of the service if only that service is produced. A price above the stand-alone costs of providing the service could not be sustained if the firm faced effective competition. If an access price did exceed stand-alone costs, firms may be encouraged to build by-pass infrastructure even though it may not be economically efficient to duplicate the existing infrastructure.

Second, common costs should not be 'over-recovered'. A firm should not earn revenues from the supply of any set of services which exceeds the forward-looking stand-alone costs of providing that set of services. This implies that the sum of the incremental and common costs which are allocated to any set of services should not exceed the stand-alone costs of providing that set of services. Therefore the allocation of common costs across all services should not exceed total common costs. 'Over-recovery' of common costs will artificially inflate the access price and may result in an under-utilisation of existing infrastructure, inefficient by-pass and a reduction in efficient competition in dependent markets.

Third, the common costs must be common to the declared service and not unduly allocated to that service. In particular, the Commission will need to be satisfied that the common costs have not been allocated with the effect of unduly reducing competition in dependent markets.

Finally, and most importantly, the Commission will need to be satisfied that the vertically integrated firm's internal transfer price incorporates any common costs incorporated in the access price. The same common costs should therefore be equally reflected in the internal transfer price and the access price.

The Commission is of the view that, where appropriate, TSLRIC can include a portion of common costs. If some of the common costs are to be allocated to the costs of the declared service, the Commission will need to be satisfied:

- the costs are shared by the declared service;
- of the size of common costs;
- common costs are not being 'over-recovered';
- the total costs of the declared service does not exceed the stand-alone costs;
- the allocation of common costs does not unduly inhibit competition in dependent telecommunications markets; and
- the same common costs are included in the access provider's internal transfer price.

Capital costs

Many of the declared services will be highly capital intensive. Capital costs will therefore comprise a significant proportion of total costs. How assets are valued, the rate of return considered 'appropriate' on these assets and the rate of depreciation will be significant determinants of the access price. In this section methods of valuing assets and estimating the cost of capital consistent with the TSLRIC pricing methodology are discussed.

Asset valuation

Estimating TSLRIC requires assets to be valued at their **economic cost**. There is a variety of methods of asset valuation (see box on next page). Of these methods, replacement cost is the methodology most consistent with TSLRIC.

Replacement cost is the present-day cost of replacing the asset with another asset that provides the same service potential.

This need not be the same asset, but rather the asset that hypothetically is the best (least-cost) option under current technology. In practice this is the best-in-use or best commercially available technology.[43]

In an environment such as telecommunications, where the least-cost technology continually changes, replacement cost will provide investors with correct signals concerning efficient 'build or buy' decisions. Access providers will also efficiently bear the risks associated with choice of technology and investment.

Methods of asset valuation

Historical/original cost is the original cost of acquiring the asset including the relevant financing costs during construction, set-up and installation costs.

Replacement cost is the present-day cost of replacing the asset with another asset that provides the same service potential. This need not be the same asset, but rather the asset that hypothetically is the best (least-cost) option under current technology. This can be the best-in-use or the best commercially available technology.

Optimised deprival value (ODV) is the cost to the asset owner if deprived of the asset. In practice ODV equals replacement cost, except where the asset would not be replaced. In that case ODV is the market value of the asset, as determined by the foregone net revenues for supplying its services.

Reproduction cost is the cost of reproducing the existing plant in substantially the same form at current prices.

Replacement cost may, in certain instances, be difficult to quantify and implement. The Commission will seek information from access providers, access seekers and other parties within the industry on the replacement cost of assets. Where appropriate the Commission will also seek independent estimates of the replacement cost of these assets.

43 A number of issues may need to be considered in best-in-use valuation. First is the adjustment of capital to best-in-use. Second are the implications for the use of other production inputs, such as labour. It may be that best-in-use technology will require less labour input and hence result in lower operating costs.

In some cases it will be necessary to approximate the replacement cost of assets using other methods of asset valuation.

Historical or original costs may provide a starting point for determining the replacement cost of a new asset.[44] For older assets the use of historical costs is more problematic. For these assets, historical costs do not reflect the current cost of providing the service potential of the asset. This can be overcome to some extent by using a general price deflator to adjust the value of the asset to current prices. However, in telecommunications where technology advances rapidly, historically incurred expenditures often have little relationship with (and generally overstate) the true economic costs of replicating an asset's service potential. As such, it will often inflate the access price and encourage inefficient by-pass. Furthermore, valuation based on historic costs provides a return to access providers independent of the quality of their investment decisions.

Reproduction cost, being based on the cost of reproducing the existing asset at current prices, provides a more accurate current valuation of the asset. However, as with historic cost it does not necessarily reflect the most efficient means of providing the service potential of the asset. Unless the asset embodies the best-in-use technology, reproduction and historic costs will not accurately reflect the true economic cost of providing the service.

The Commission is of the view that replacement cost normally is the appropriate method of asset valuation under Part XIC. The Commission recognises that in some cases replacement cost is difficult to quantify. In such cases, historic cost (appropriately inflated) or reproduction cost may be used to provide an estimate of the replacement cost. However, in such cases, the Commission will usually need to be satisfied that the current assets embody the most efficient technology of providing the service.

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44 Historical costs are generally easily quantified since they are based on objective documentation which can be verified by parties independent of the access provider and access seeker.

Cost of capital

The cost of capital is the opportunity cost of the debt and equity funds to finance the operations of the firm. Determining the cost of capital is an important part of determining an access price. A cost of capital that exceeds the return in the market earned by investments of similar risk (normal commercial return) will encourage over investment and an access price greater than the true economic costs of providing the service. On the other hand, a cost of capital below the normal commercial return will prevent access providers from gaining a legitimate return on their investments and discourage future investment.

The cost of capital is usually calculated as the weighted average cost of capital (WACC). In the WACC, the cost of debt financing for a firm is separated from equity financing.[45] Debt financing costs can be measured directly by the current effective interest rate on the various debts held by the firm.

The starting point for estimating the cost of equity is the risk-free rate of return (for example the return on 10 year government bonds). The cost of equity may be adjusted above the risk-free rate if investment in the asset subjects the investor to risk. Such risks are expected to vary considerably on a case-by-case basis.

The Commission will need to be satisfied that any risk adjustment incorporated in the cost of equity reflects the appropriate risks associated with the investment. Any adjustment of the cost of equity based on risk must be consistent with that which would occur in the market for similar assets. The nature of these risks may depend upon a range of factors including the nature of the assets involved, the sunk costs associated with the firm's investment and demand uncertainty.

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45 Debt financing is generally less risky than equity because creditors have claims to payment before shareholders.

The Commission usually will use the weighted average cost of capital to estimate the cost of capital to access providers. Debt financing costs will usually be measured directly by the current effective interest rate on the various debts held by the firm. The Commission will use the risk-free rate as the basis for the cost of equity and consider any adjustments based on the risk of the investment on a case-by-case basis.

Depreciation

Depreciation represents the decline in the economic value of assets used to provide access services. This is a cost which could legitimately be included in access prices. Consistent with the TSLRIC methodology, depreciation schedules should be constructed and based on the expected decline in the economic value of assets using a forward-looking replacement cost methodology.

The decline in the economic value of an asset is determined by a range of factors including its expected operational life and expectations concerning technological obsolescence. The Commission will use information from the access provider, access seeker and, where necessary, other experts to determine whether the constructed depreciation schedules appropriately reflect the expected decline in the economic value of the underlying assets.

When determining the capital costs of existing assets, it is necessary to incorporate the past decline in the economic value of the assets. This can be achieved by using the written-down value as a basis for estimating the current value of existing assets, where the written-down value is based on the past decline in the economic value of the assets.

Appendix 3

Access prices and carrier obligations

Under the provisions of the *Telecommunications Act 1997*, licensed carriers assume certain rights and obligations, including funding universal service obligations (USOs). Given the inherent nature of declared services it is highly probable that only carriers will be access providers. Accordingly, circumstances may arise where a carrier seeks to recover the financial consequences of any licence obligations through prices to access seekers, particularly if the access seeker is not a licensed carrier.

Recognising the consequences of such action for competition, particularly as evidenced in other jurisdictions where there are no provisions for shared funding of the USO, the Commission makes the following comments.

First, in respect of the USO, the Commission notes that there are specific requirements within the *Telecommunications Act 1997*, relating to the provisions and funding of the USO. The Commission sees merit in industry, possibly through the Australian Communications Industry Forum, developing its own competitively neutral clearing house in respect of USO contributions from non-carrier access seekers. The Commission may revisit the issue of access prices and the USO once there is greater clarity as to how the USO is to be funded.

Second, the Commission's understanding is that many carrier obligations are not related to access and therefore should not be considered as part of the access pricing principles. Further, the Commission notes that a possible offset against such obligations are the rights of carriers pursuant to the *Telecommunications Act 1997*.

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