



# **Future Access Pricing Approaches for PSTN, ULLS and LCS**

**Discussion Paper**

**September 2002**

## Preface

Under Part XIC of the *Trade Practices Act 1974* (the Act), the Australian Competition and Consumer Commission (the Commission) is responsible for arbitrating disputes about access to particular ‘declared’ services and also for assessing access undertakings relating to access to such declared services. One of the prime issues that arise under these processes is the determination of an appropriate access price.

The Commission declared the originating and terminating Public Switched Telephone Network (PSTN) service in July 1997, and the unconditioned local loop service (ULLS) and the local carriage service (LCS) in August 1999.

The declared PSTN services are, in general, provided by means of a fixed-line network. They are inputs which service providers use to supply long distance, fixed-to-mobile and mobile-to-fixed calls to end-users in Australia. ULLS involves the use of unconditioned cable, primarily copper pairs, between end-users and a telephone exchange, where the copper terminates. Thus, PSTN and ULLS are interconnection services. LCS, on the other hand, is a service for local call resale. That is, for the carriage of telephone calls from customer equipment at an end-user’s premises to separately located customer equipment of an end-user in the same standard zone.<sup>1</sup> Telstra is the predominant supplier of these services.

On 24 April 2002, in its preliminary response to the Productivity Commission’s (PC’s) report<sup>2</sup>, the Government proposed a package of measures highlighting the need of the telecommunication regulatory regime to provide timely, efficient and transparent outcomes for all parties involved.

One of the central features of the Government’s package was the requirement of the Commission to publish model terms and conditions of access, including prices, which could be used to provide guidance to participants in terms of their access negotiations as well as in the provision of undertakings. In addition, such model terms and conditions could be taken into account in determining access disputes relating to telecommunications services such as PSTN interconnection, LCS, and the ULLS. The Government noted that such a measure would encourage the industry to resolve disputes in a timely manner as well as reducing the scope for regulatory gaming.

Such a requirement could also be characterised in terms of the setting of indicative prices for these core services. In this paper, the terms model price terms and conditions and indicative prices will be used interchangeably.

It should be noted that the Commission has previously published indicative rates for services such as the PSTN<sup>3</sup>, ULLS<sup>4</sup> and LCS<sup>5</sup>. The Commission has considered that this type of

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<sup>1</sup> Standard zone has the same meaning as in Part 4 of the *Telecommunications (Customer Protection and Service Standards) Act 1999*.

<sup>2</sup> DCITA, Media release, 24 April 2002, “Telecommunications regime to be made more competitive”, 97/02.

<sup>3</sup> In May 2001, the Commission announced its provisional headline rate for 2001-02 for domestic PSTN originating and terminating access on Telstra’s network – this is discussed in further detail below.

information can act as an indicator of the its views and provide greater certainty about pricing outcomes to assist commercial negotiations, thereby increasing the chance of resolving differences more in a more timely manner.

In particular, in 2001-02 the Commission set indicative prices for the ULLS through a number of arbitration processes. It also set 2001-02 indicative price for the PSTN by agreeing to a modified version of Telstra's proposed adjustments to the 2000-01 price. In contrast to this previous approach of determining or forming views on access prices in response to particular regulatory actions, the setting of future model price terms and conditions affords the ACCC the opportunity to 'step back' and consider the process for the setting of such prices afresh.

This discussion paper therefore considers the need for the setting of indicative or model price terms and conditions and discusses a number of alternatives or options on how such indicative prices should be set. For example, whether the regulator should continually reset prices in each year, whether an economic model should be used and if so how. The paper also provides some preliminary views on a suggested approach to the setting of future (indicative) access prices. Interested parties are invited to make submissions on these specific issues. This is in anticipation of the Government's pending release of its legislative package noted above, but the paper should also be seen as the first step in this process and it would be desirable to get this process well underway before the new provisions take effect.<sup>6</sup>

This discussion paper, however, does *not* propose or specify particular access prices as indicative or model price terms. This is more properly a matter that will be pursued at a later stage in the process. That said, the paper does take the opportunity to outline some current ACCC views on access pricing principles, which reflect a number of previous proceedings, including a series of arbitrations and preliminary deliberations in the Australian Competition Tribunal. This has been included as something of a contextual backdrop to the discussion of how indicative prices should be set. This is partly to put the options in a clearer context and also to foreshadow the further consideration that the Commission will be engaged in with industry in determining the indicative rates themselves. Interested parties are also welcome to comment on these preliminary views, however, these issues will be taken up more directly in the next stage of the process. More importantly, the reference to these methodological issues, even at this relatively early stage, signals a key imperative that such issues should be considered as part of a public process. This is in contrast to the way such issues were dealt with in the recent Tribunal proceedings.

This means the Commission expects that once comments on possible approaches to the setting of indicative prices are considered, that the next major step is to look more closely at access pricing principles and the actual level of indicative prices. This would also coincide with the release of the Government's legislative package and the work that would follow as a consequence.

Another interesting facet of the issue of how access prices should be determined in the future relates to the inter-relationship with future USO cost setting arrangements. The Commission

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<sup>4</sup> Refer to ACCC, *Pricing of unconditioned local loop services (ULLS) – Final Report, May 2002*.

<sup>5</sup> Refer to ACCC, *Local Carriage Service pricing principles and indicative prices – Final Report (Revised)*, April 2002

<sup>6</sup> It is expected that the package of measures is intended to take effect by early 2003.

understands that the Government will be looking at revising current USO levy arrangements following the expiry of current Ministerial determinations on the matter. In this regard, one of the available options in this process is the development and use of a USO cost model. This raises the prospect of developing a common industry modelling framework for both access prices and USO costs. While this issue is not considered in this paper, it is important to keep in mind the desirability of common modelling frameworks and also that both the access price setting process and any USO cost debate be exposed fully to public scrutiny.

Written submissions should be provided to the Commission by 18 October 2002.

Please forward any written submissions to:

Chris Pattas  
Senior Director  
Australian Competition and Consumer Commission  
GPO Box 520J  
Melbourne VIC 3001

Further Inquiries: Igor Popovic (03-9290 1920)

Fax: 03-9663 3699

E-mail: [igor.popovic@acc.gov.au](mailto:igor.popovic@acc.gov.au)

Submissions should also be provided in electronic form to the above e-mail address. Submissions will be treated as public documents unless otherwise specified. Parties wishing to lodge only confidential submissions are advised to discuss this with staff prior to lodgment.

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## **(i) Executive Summary**

Since commencement of the current regulatory regime, the Commission has determined PSTN and ULLS access prices on an ongoing annual basis through use of economic cost modelling. The prices determined by the Commission have largely concerned past or then current regulatory periods.

However, one of the central features of the Government's proposed package of measures, responding to the Productivity Commission's (PC) report<sup>7</sup>, is the requirement of the Commission to publish model price terms and conditions or indicative terms and conditions of access, for PSTN, ULLS and LCS for upcoming regulatory periods. These proposed measures highlighted the need of the telecommunication regulatory regime to provide timely, efficient and transparent outcomes for all parties involved

The setting of indicative prices also offers a potential response to the Commission's and the industry's concerns about the previous extent of disputation and the desirability of providing more information about the Commission's views on Telstra's network costs. It is expected that this information should encourage the parties to settle their differences in a more timely manner through commercial negotiations, without recourse to Commission arbitral processes.

Importantly, the Commission considers that indicative prices also have a key role in guiding and encouraging participants to submit access undertakings. Specifically, the Commission believes that undertakings that include reasonable terms and conditions could complement the setting of indicative prices by providing long-term certainty and information on the pricing of services to the marketplace.

In practice, the Commission considers there are three general approaches to calculating indicative prices for PSTN and ULLS access:

- Use an economic cost model to reset prices for each period;
- Use a cost model, appropriately modified and updated, to establish a starting point period to which an adjustment factor can be applied; and
- Establish both starting point and price path using the outcomes of previous cost modelling work and with some limited adjustments going forward.

With respect to the future pricing of LCS, there are two general approaches to calculating indicative prices that could be utilised:

- Continuous use of a Retail-minus retail costs methodology to re-calculate prices on a yearly basis with the use of Regulatory Accounting Framework (RAF) information to calculate retail costs; or

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<sup>7</sup> Productivity Commission, *Telecommunications Competition Regulation*, Inquiry Report No. 16, 21 September 2001.

- Use of a Retail-minus retail costs methodology to calculate a base set of retail costs as a initial starting point to which an adjustment factor can be applied to estimate retail costs going forward.

Under both approaches, indicative retail costs along with the prevailing retail price of local calls for the relevant regulatory period would be used to calculate LCS prices under the Retail-minus retail costs methodology.

The Commission canvasses each of these alternatives in the paper and seeks the views of interested parties. At this stage, the Commission's preliminary approach for setting indicative prices for PSTN and ULLS services would involve using a TSLRIC-based model as a starting point (price for the first regulatory period) and then applying an adjustment factor to calculate indicative prices for the following periods. It is suggested that the Commission publish PSTN and ULLS indicative prices for the next *three* regulatory periods.

Similarly, the Commission's preliminary approach for determining indicative prices for the LCS would involve the use of an adjustment factor applied to retail costs which, together with prevailing local call retail prices, could be used to calculate indicative prices for future periods in accordance with the Retail-minus approach. The starting point of retail costs would initially be calculated using RAF information. It is suggested that the Commission publish indicative retail costs for the next three regulatory periods.

Finally, the Commission emphasises that any indicative price would only be used for the purposes of providing information and guidance to the market, and would not be binding in any arbitral processes that may arise.



# 1. Background

Since developing its TSLRIC methodology in 1997 and its (n/e/r/a) economic cost model in 1999, the Commission has determined PSTN and ULLS access prices on an ongoing basis by repeated application of the cost model with updated input variables and largely unchanged parameters.<sup>8</sup> This approach for the calculation of access charges provides a degree of reliability or robustness to the Commission's assessment and views<sup>9</sup>, however it is not the only method a regulator could employ to estimate access prices and disseminate information about network costs to the market.

The main alternative to continual development and use of the full model is to estimate future rates through the use of previous modelling work and the application of various adjustment approaches to provide indicative prices to inform the market.<sup>10</sup> While such an approach is less robust in terms of cost estimation, it offers several advantages, particularly in terms of encouraging more timely outcomes and more quickly encouraging commercial negotiations of prospective disputes.

A large number of disputes have been notified to the Commission for arbitration since commencement of the current regulatory regime. From past experience, the Commission has noted that information asymmetries that exist between access seekers and Telstra may mean that access seekers are likely to seek arbitration in an attempt to assess the reasonableness of commercial offers Telstra makes. However, these arbitration processes are time-consuming to conduct and impose costs and delays on participants. More generally, this has an adverse effect on the efficiency of the market and the certainty with which new entrants can establish their own operations.

Within this context, the setting of indicative or model prices offers one potential response to the Commission's and the industry's concerns about the extent of disputation and the desirability of providing more information about the Commission's views on Telstra's network costs. This information should encourage the parties to negotiate access prices in a more timely manner as it will reduce any uncertainty about the Commission's general views on efficient pricing for these services. In effect, this is intended to encourage commercial outcomes, without recourse to Commission arbitral processes. Thus, the publication of indicative prices by the Commission in the absence of an agreed reasonably comprehensive undertaking is seen as promoting industry-wide resolution of issues but in a less onerous or intrusive way.

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<sup>8</sup> The application to ULLS required a disaggregation of the model and a change to network parameters associated with CAN costs to deal with interconnection at levels of the network below the LAS.

<sup>9</sup> At least when the input variables and model parameters are seen as sufficiently accurate to the period and service in question.

<sup>10</sup> This would involve the use of an existing starting point and to select an average change factor based on previous changes to access rates and adjusting for some expected future trends in traffic and cost relationships

Most recently, the Government has released its preliminary response to the Productivity Commission's *Telecommunications Competition Regulation Inquiry Report*.<sup>11</sup> One of the central features of the proposed package of measures is the requirement of the Commission to publish indicative terms and conditions of access, including prices, which could be utilised in determining disputes relating to access to core telecommunications services, such as PSTN, ULLS and the LCS.<sup>12</sup> The Commission considers that the introduction of indicative pricing would be a timely and efficient mechanism for meeting this requirement.

It is against this background that the Commission has decided to publish this discussion paper regarding how an indicative pricing regime for the PSTN, ULLS and LCS should be established.

## 1.1. The Regime

### 1.1.1. Functions/legislative criteria

Under Part XIC of the *Trade Practices Act 1974* (the Act), the Australian Competition and Consumer Commission (the Commission) must, among other tasks:

- approve (or otherwise) undertakings submitted by access providers which may include the terms and conditions of access to declared telecommunications services<sup>13</sup>; and
- arbitrate disputes between parties concerning the terms and conditions of access to declared telecommunications services.<sup>14</sup>

The object of Part XIC of the Act is to promote the long-term interests of end-users (the LTIE) of carriage services or of services provided by means of carriage services.<sup>15</sup> This will be achieved, in part, through establishing the rights of third parties to gain access to services that are necessary for the competitive supply of services to end-users.

In considering whether declaration of a service, approval of an access code or an access undertaking or the making of an arbitration determination will be in the long-term interests of end-users, the Commission must consider the achievement of the following objectives:

- promoting competition in markets for telecommunications services;
- achieving any-to-any connectivity in relation to carriage services that involve communication between end-users; and

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<sup>11</sup> DCITA, Media release, 24 April 2002, "Telecommunications regime to be made more competitive", 97/02.

<sup>12</sup> Note the Government is currently finalising the details of its legislative package and the requirements are likely to refer to the publishing of 'model terms and conditions' rather than 'indicative prices'

<sup>13</sup> Declared services are services declared under Part XIC of the Act. Refer to section 152AL of the Act.

<sup>14</sup> Under the *Telecommunications Act 1997*, the Commission also has responsibilities to arbitrate disputes over the terms and conditions for matters such as preselection and number portability.

<sup>15</sup> Sub-section 152AB(1) of the Act.

- encouraging the economically efficient use of, and the economically efficient investment in, the infrastructure by which telecommunications services are supplied.<sup>16</sup>

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 of the Act, the Commission cannot approve a draft TAF access code<sup>17</sup> or accept an undertaking unless satisfied that the terms and conditions specified are reasonable.<sup>18</sup> In determining whether terms and conditions are reasonable, regard must be had to the following matters:

- whether the terms and conditions promote the LTIE;
- the legitimate business interests of the carrier or carriage service provider concerned, and the carrier's or carriage service 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.<sup>19</sup>

This does not, by implication, limit the matters to which regard may be had.<sup>20</sup>

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.<sup>21</sup>

### **1.1.2. Pricing methodologies**

In arriving at prices for the PSTN, ULLS, and LCS, the Commission has employed two pricing approaches; the Total Service Long Run Incremental Cost (TSLRIC) approach and the Retail-minus approach.

The TSLRIC approach used in the pricing of the PSTN and ULLS takes account of the incremental or additional costs the carrier incurs in the long run in providing a service, assuming all other production activities remain unchanged. Under this approach, costs

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<sup>16</sup> Section 152AB(2) of the Act.

<sup>17</sup> Note that amendments to Part XIC currently in prospect will remove references to the TAF and the TAF access code. Reference will simply refer to an access code made by the ACCC.

<sup>18</sup> The Commission must also ensure that the terms and conditions in the TAF access code, in undertakings and any arbitration determination is consistent with any Ministerial pricing determination in place. See section 152CH of the Act.

<sup>19</sup> Sub-section 152AH(1) of the Act.

<sup>20</sup> Sub-section 152AH(2) of the Act.

<sup>21</sup> Paragraph 152CR(1)(e) of the Act.

common to providing the regulated service (such as the PSTN and ULLS) and other services should be divided among all those services. This contrasts a stand-alone methodology whereby one service using common elements bears the entire cost of those elements and other services are treated as increments added to it.

The Retail-minus approach determines the wholesale price of a service by subtracting retail costs from the retail price of the service, in this case the LCS.

These pricing approaches are discussed further in Appendix 1.

## **1.2. Regulated Services**

### **1.2.1. PSTN**

The declared PSTN services are, in general, provided by means of a fixed-line network. They are inputs which service providers use to supply long-distance, fixed-to-mobile and mobile-to-fixed calls to end-users in Australia. In general, the same network elements are used to supply both the Domestic PSTN Originating Access service and the Domestic PSTN Terminating Access service.<sup>22</sup> Domestic PSTN Originating and Terminating services were declared in July 1997.

Telstra has lodged two separate undertakings to the Commission in respect of the Domestic PSTN Originating and Terminating access services.

The first undertaking was submitted in November 1997. The undertaking was a comprehensive document covering a range of price and non-price terms surrounding PSTN origination and termination. Its assessment required a substantial amount of work by the Commission including the development of a TSLRIC network-pricing model. This was the first application of this costing approach in the Australian context.

In order to assist the Commission in assessing the charges contained in the first undertaking, the Commission engaged National Economic Research Associates (n/e/r/a) to construct a model to estimate the TSLRIC of providing the PSTN services. The Commission also engaged Ovum Pty Ltd to compare the charges in the undertaking with the charges for the same or similar services in other countries. Other projects carried out by the Commission as part of its assessment included a historical cost study, a study comparing the charges in the undertaking with Telstra's retail national long-distance prices and a study comparing the charges in the undertaking with other charges for the same service.

In June 1999, the Commission announced its final decision to reject Telstra's first (1997) PSTN undertaking. The Commission concluded that the non-price terms and conditions provided Telstra with too much discretion over when, to whom and how the services would be provided, created uncertainty, and failed to impose obligations on Telstra such as Telstra

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<sup>22</sup> The Commission understands that in comparing the network elements used to supply the Domestic PSTN Originating Access service and the Domestic PSTN Terminating Access service, the only difference is that, for the Domestic PSTN Originating Access service, network functionality to enable preselection and the use of over-ride codes is also provided.

required of service providers. The Commission also considered that the prices proposed were more than double those considered reasonable.

In assessing Telstra's revised PSTN undertaking, lodged in September 1999, the Commission built on the pricing work that it had carried out in assessing the first undertaking. In July 2000, the Commission announced its decision to reject the undertaking on the basis that the proposed charges were generally above the efficient costs of supplying the services. In reaching its final decision, the Commission assessed the proposed charges against estimates of the forward-looking costs of supplying the declared PSTN services calculated by using an updated version of the cost model originally prepared for it by n/e/r/a.

In addition to the undertakings process discussed above, the Commission received notification of six disputes relating to PSTN access since declaration of the service. The Commission has used the work carried out in its assessments of Telstra's PSTN undertakings, particularly the pricing work, as an input to these arbitrations.

In September and November of 2000, the Commission issued final determinations in access disputes regarding PSTN Originating and Terminating access between AAPT and Telstra, Primus and Telstra and FlowCom and Telstra. The first two determinations were subsequently appealed by Telstra to the Australian Competition Tribunal (the Tribunal). These determinations set a price for the service for the 1999-00 and 2000-01 financial years. Subsequently, in May 2001, the Commission announced its provisional headline rate for 2001-02 for domestic PSTN originating and terminating access on Telstra's network.

The Commission considered it useful to give public indications on its views on the basis that the arbitration determinations, based on its assessment of Telstra's undertaking, were to expire 30 June 2001, and the fact that the underlying methodology used to determine PSTN access prices was then under review by the Tribunal. The Commission also considered it important to provide greater certainty about pricing outcomes to assist negotiations by parties for the post 2000-01 period, thereby avoiding the possibility of further arbitration disputes. Since that time, the Commission has not been required to arbitrate any new dispute relating to the provision of PSTN services.

In October 2000, Telstra lodged applications with the Tribunal for review of the Commission's determinations in relation to Telstra disputes with AAPT and Primus, which were finalised in September 2000.

After a series of directions hearings, and the submissions of detailed contentions and responses by the parties throughout 2001, Telstra it reached agreements with the disputing parties, in April 2002 and withdrew the case.

If the Tribunal case had reached a conclusion and a decision had been made, this would have established a benchmark approach and methodology that would have applied to future periods for not only the PSTN, but also the ULLS.

### **1.2.2. Indicative 2002-03 PSTN rates**

The Commission has already formed some preliminary views on 2002-03 indicative prices based on the same methodologies used in calculating those for 2001-02. The Commission does not intend to publish such views for this period but would be prepared to provide advice to any party that is currently in dispute. As with indicative prices more generally, the

Commission notes that such indicative prices are intended to guide industry participants, and would not have a role in binding the Commission in any future arbitral processes.

### **1.2.3. PSTN originating and terminating access services provided by non-dominant or smaller fixed networks – voice calls**

Under the post 1997 legislative regime, the Commission's declaration or regulatory determinations are in relation to particular services (such as the PSTN originating and terminating services), which may be provided by a number of different networks or service providers and are therefore not company or operator specific. This contrasts with the policy of dominant carrier regulation, as was the case prior to 1997, which was focussed on the former monopoly provider Telstra.

This means that the Commission's regulatory ambit can also include other smaller carriers who provide fixed voice services

The Commission takes the opportunity in this discussion paper to provide further (updated) information on its views in relation to PSTN originating and terminating access services provided by non-dominant or smaller fixed networks. It does this by reference to a recent dispute between Telstra and PowerTel in relation to the charge for terminating access to PowerTel's network for voice calls.

The Commission published revised pricing guidelines for PSTN origination and terminating access services provided by non-dominant or smaller fixed networks in January 2002.<sup>23</sup> These guidelines included an indicative rate for PSTN terminating access on these networks with respect to data calls for the financial year 2000-01. The rate comprised a flagfall charge of 0.03 cents and a usage charge of 0.13 cents per minute capped at a maximum of 40 minutes (the average length of a data call). The guidelines noted however that:

...[t]he interconnection arrangements and estimates [detailed in the guidelines]...should be applied as a short-term or transitory measure [and]... the LTIE will be best promoted when interconnection arrangements which reflect the technical and cost structures of emerging networks are implemented.<sup>24</sup>

Subsequent to the release of these revised guidelines, the Commission was approached by Telstra and PowerTel seeking a non-binding advisory view on a suitable terminating rate for *voice* terminating access on PowerTel's network. The Commission supported the parties' request to seek assistance on this basis as an alternative or prelude to any subsequent notification of a dispute for resolution under the Commission's statutory powers. It therefore authorised Commission staff to provide non-binding advice to the parties on what they considered to be suitable method for arriving at a PSTN voice terminating rate.

Commission staff's advice to Telstra and PowerTel was that the rate should be based on the TSLRIC of terminating access as calculated for Telstra's network in applicable geographic locations (CBD, Metropolitan etc.), but comprise only the network components (eg number and type of exchanges) that would be used in terminating a voice call on PowerTel's network. This may result in some variation to the above rates that were specified for the termination of data calls. Staff also indicated that the capping provision contained in the revised guidelines

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<sup>23</sup> See ACCC, *Revised pricing guidelines for PSTN terminating and originating access services provided by non-dominant or smaller fixed networks*, Pricing Principles Paper, January 2002.

<sup>24</sup> *Ibid.* p. 24.

related to data calls specifically, and that it was up to the parties as to whether they should apply this provision to voice calls. This advice was used by Telstra and PowerTel to aid further commercial negotiations.

The Commission considers that notification to the broader market of the above advice provided to Telstra and PowerTel should aid commercial negotiations between other parties with respect to PSTN originating and terminating access on non-dominant or smaller fixed networks. It also supports efforts by parties to seek similar non-binding advisory views from Commission staff, such as provided to Telstra and PowerTel, as an alternative to notification of access disputes for declared services.

#### **1.2.4. ULLS**

The unconditioned local loop service involves the use of unconditioned cable, primarily copper pairs, between end-users and a telephone exchange, where the copper terminates. This service enables other telecommunications companies to supply advanced, high-speed data services, such as xDSL (digital subscriber line), to customers as well as local and long-distance voice services in competition with Telstra. The Commission declared the ULLS in August 1999.

In August 2000, the Commission released a discussion paper, which provided its preliminary views on various methodological issues surrounding the pricing of this service as well as its views about the various pricing claims that have been made, particularly by Telstra, in relation to this service. The paper contained the Commission's preliminary view of appropriate ULLS charges, having regard to the application of its preferred methodology to the costing work undertaken by the Commission in the context of Telstra's PSTN undertaking assessment.

In addition, at the time of the release of this discussion paper, a number of access seekers had notified the Commission of access disputes under Division 8 of Part XIC of the Act in relation to the pricing of the ULLS. By October 2000 the Commission had received four dispute notifications, from AAPT, Optus, Primus and OneTel, relating to the ULLS supplied by Telstra.

The Commission issued interim determinations on each of these disputes with the exception of Primus in December 2000. Subsequently, OneTel withdrew its notification after it went into receivership and prior to the Commission issuing a draft final determination. The other three notifications were withdrawn by the parties in November 2001 after the Commission had made draft final determinations but prior to the Commission issuing any final determinations.

In March 2002, the Commission released its Final Report on the pricing of ULLS.<sup>25</sup> This report incorporated the work developed through the finalisation of the ULLS arbitrations and the Commission's pricing consideration. The Commission's decision to finalise and release its earlier ULLS draft pricing discussion paper was intended to provide similar information to the market place about ULLS pricing as would have been accomplished by the publication of its final ULLS arbitration determinations. The Commission considered that this information

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<sup>25</sup> ACCC, *Pricing of unconditioned local loop services (ULLS) – Final Report*, May 2002.

could act as an indicator of the its views and be used as an input in commercial negotiations, thereby increasing the chance of resolving differences more quickly.

### **1.2.5. LCS**

The LCS is a service for local call resale. That is, for the carriage of telephone calls from customer equipment at an end-user's premises to separately located customer equipment of an end-user in the same standard zone.<sup>26</sup> After holding a public inquiry, the Commission declared the LCS in August 1999.

After the declaration of the service, the Commission was notified of nine disputes in relation to the LCS. All of these disputes have since been resolved by commercial negotiation, and there have been no further arbitration disputes in relation to the LCS.

In each of the LCS arbitration disputes notified to the Commission one of the main issues in contention was the price at which Telstra supplied the service to its competitors. To assist in developing principles which could be used in resolving each of those disputes, and more broadly, the Commission released a draft report in April 2000.

A final report issued in November 2000 indicated that the retail-minus approach was likely to be the Commission's approach to pricing the LCS in either an assessment of a LCS undertaking or an arbitration dispute on the price of the LCS.

A revised final report was released in April 2002<sup>27</sup>, which confirmed that approach and included indicative prices determined in accordance with it. As in the case of the ULLS, the purpose of this report was to inform industry, government and other interested parties on the principles and indicative prices that are likely to guide the Commission when considering an access dispute or assessing an undertaking in relation to pricing for the LCS. In providing guidance as to the Commission's likely approach to the resolution of access disputes, the publication of the report was seen as assisting commercial negotiations going forward.

## **2. Why publish indicative pricing**

This section discusses some of the advantages of setting indicative prices as compared with other approaches.

### **2.1. Outcomes and problems with past approaches**

The negotiate-arbitrate model, which includes a provision for undertakings to be provided by the access provider, has proved problematic in practice. Since commencement of the current regulatory regime, a large number of disputes have been notified to the Commission for arbitration, indicating that access providers and access seekers have been unable to negotiate

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<sup>26</sup> Standard zone has the same meaning as in Part 4 of the *Telecommunications (Consumer Protection and Service Standards) Act 1999*.

<sup>27</sup> ACCC, *Local Carriage Service pricing principles and indicative prices – Final Report (Revised)*, April 2002



mutually satisfactory conditions. The Commission has found that arbitrations are time-consuming to conduct and so impose costs and delays on participants, as well as a cost to the efficiency of the market and the certainty with which new entrants can establish their own operations.

The Commission notes that the negotiate-arbitrate model provides limited incentives for access providers and access seekers to conclude effective agreements concerning the terms and conditions of access. This is particularly where there is a market power imbalance between the access provider and the access seeker and where information asymmetries are evident. In such circumstances, access seekers are likely to be at a disadvantage, and may seek arbitration in an attempt to assess the reasonableness of commercial offers advanced to them.<sup>28</sup> As there are no undertakings currently in place to provide 'reference tariffs', and if mediation and other processes are inappropriate or unsuccessful in resolving the dispute, arbitration is the necessary consequence.

Furthermore, undertakings intended to provide more flexibility to access providers and reduce their exposure to pre-emptory arbitral determinations. In practice, however, they provide them with an ability to delay access to services.

Due to the large number of disputes that have been notified, the Commission has acquired, by default, the role of price-setter for a range of input services. This was clearly not the intention when the regulatory framework was developed, but has become an inevitable consequence of the shortcomings of the negotiate-arbitrate model in the presence of an integrated operator with significant market power. This means there is a lack of certainty about what are significant input costs and the likelihood that what is being proposed by the incumbent is above efficient costs.

The effects of service declaration on the incentives for new entry into downstream markets, infrastructure investment and service innovation depend ultimately on the return which infrastructure owners receive from the provision of input services. In recognising these sensitivities, the Commission has devoted considerable effort to its pricing work.

The Commission has found that, in its experience, price terms and conditions have so far tended to exceed non-price terms and conditions as sources of dispute. This is perhaps due to the importance of price as a 'first order' competitive issue and the greater difficulty of access seekers in evaluating the offers of access providers with no or limited access to cost information.

While the release of indicative prices may not be able to completely avoid all arbitrations or the ability to use undertakings in a strategic way, it may assist in overcoming some of the information asymmetries that currently exist between Telstra and access seekers.<sup>29</sup> This measure will effectively increase the transparency of pricing issues in the marketplace, thereby reducing the level of uncertainty for access seekers in negotiations. In addition, it is possible that the adoption of an indicative pricing approach will reduce the Commission's

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<sup>28</sup> While the Commission has powers that could be used to reduce information asymmetries without recourse to arbitration, those processes, too, are time-consuming and do not necessarily eliminate such incentives.

<sup>29</sup> In this regard, the Commission has recently issued its draft guide on the resolution of telecommunications access disputes, including telecommunications arbitrations.

reliance on existing economic models and the need for continual updating, which is a time and resource intensive process. Ultimately, it is envisaged that indicative pricing can lead to more timely resolution of differences between parties through commercial negotiation with less dependence on the Commission's arbitral processes.

## **2.2. The Productivity Commission report and government response**

In its *Telecommunications Competition Regulation – Draft Report*, the PC discussed the issue of mechanisms for updating pricing determinations. The PC noted that, due to considerable informational demands, the initial construction of an engineering model for calculating TSLRIC is a time-consuming task, which can lead to delays in access pricing determinations.

In consideration of this factor, the PC raised the possibility of updating prices through setting of initial prices on a TSLRIC basis with the subsequent time path of prices calculated using a 'glide-path' approach. This would involve access prices being required to rise by no more than the consumer price index less a relevant productivity factor (CPI – X).

In the Final version of its report, the PC noted that, while a number of participants supported this CPI – X approach, it 'may be easier to adapt an agreed set of key variables within the existing TSLRIC model on a year by year basis – principally traffic volumes – to determine updated determination prices'.<sup>30</sup>

On 24 April 2002, the Government announced its preliminary response to the PC's report.<sup>31</sup> In proposing a package of measures, the Government highlighted the need of the telecommunication regulatory regime to provide timely, efficient and transparent outcomes for all parties involved.

One of the central features of the Government's package was the requirement of the Commission to publish indicative terms and conditions of access, including prices, which could be used in determining access disputes relating to the following telecommunications services, PSTN interconnection, local call resale, and the ULLS. The Government noted that although the Commission has already published indicative prices for the LCS and ULLS, such a measure remains imperative in encouraging the industry to resolve disputes in a timely manner as well as reducing the scope for regulatory gaming.

## **2.3. Role of indicative pricing**

Regulators have certain choices in how they regulate or determine access pricing in particular circumstances. The Commission chose initially to determine prices by developing an economic/engineering model of relevant network elements as this work had never been undertaken in Australia in this form previously. One further advantage of such an approach

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<sup>30</sup> Productivity Commission, *Telecommunications Competition Regulation*, Inquiry Report No. 16, 21 September 2001, p.411. This is similar to the approach the Commission employed for updating its price estimates for PSTN access in May 2001 – refer to discussion above on p. 5.

<sup>31</sup> DCITA, Media release, 24 April 2002, "Telecommunications regime to be made more competitive", 97/02.

is that it establishes a basis for any future work to determine indicative prices. As discussed above, the Commission has undertaken a considerable amount of work in modelling Telstra's network costs through the course of the undertakings and arbitration processes relating to the declared PSTN and ULL services.

Furthermore, the Commission's participation in the proceedings relating to Telstra's appeal to the Tribunal enabled further scrutiny and analysis of the costing of PSTN origination and termination. This has enhanced the Commission's understanding about modelling the cost of the PSTN and ULLS.

The Commission's experience is that the potential outcome of arbitrations is an important factor in commercial negotiations, particularly where there is little or no transparency about Telstra's costs of providing the services. This more open environment is also well suited to resolving disputes through the use of a more streamlined and flexible dispute resolution approach, such as third-party mediation.

It is worth noting that the current sets of commercial agreements between Telstra and at least some access seekers relating to the provision of PSTN, ULLS and LCS services are expected to expire in the near future. The Commission considers that indicative prices can act as an effective reference tool in encouraging continued dialogue between Telstra and access seekers toward commercial resolution of disputes. Thus, the Commission views the release of indicative prices as an important measure in preventing a fresh round of access disputes arising.

While undertakings have, to date, given access providers further scope for regulatory gaming and delaying of access to services, the Commission does not consider the undertaking process to be incompatible with the establishment of an indicative pricing regime. In so far as access providers submit reasonable undertakings, this process provides a further mechanism for ensuring certainty to access seekers in negotiating access. Thus the Commission considers that undertakings, comprising reasonable terms and conditions, could provide a compliment to indicative pricing. In particular, indicative prices can provide guidance in the development of undertakings in a similar way to their role in guiding negotiations.

### **3. Possible approaches to future pricing of PSTN and ULLS**

Following the Commission's development of its TSLRIC methodology in 1997 and the (n/e/r/a) economic cost model in 1999, it has determined PSTN and ULLS access prices on an ongoing basis by repeated annual application of the model based on updated input variables and largely unchanged parameters. The application to ULLS required a disaggregation of the model and a change to network parameters associated with CAN costs to deal with interconnection at levels of the network below the LAS.<sup>32</sup>

Calculating access charges in this way provides a degree of reliability or robustness to the Commission's assessment and views, but is not the most timely or only way the Commission

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<sup>32</sup> The local access switch (LAS) and higher level transit (trunk) switch are typically where PSTN access is provided.

can derive relevant information about network costs and access pricing and provide it to the market over time.

The main alternative to continual development and use of the full model is to estimate future rates by making use of previous modelling work and applying various adjustment approaches to set indicative prices in order to inform the market.<sup>33</sup> While such an approach may be less robust in terms of cost estimation, it offers several advantages, particularly in terms of encouraging more timely outcomes and quicker commercial negotiations of prospective disputes. In light of the above, the Commission is interested in the industry's attitudes to adoption of such an approach.

A more robust approach in developing a price path is to use an updated model to establish a starting point and the relevant price change factor. Considerably more work would be required at the outset to establish this arrangement, which means it would not be as timely as the approach above. It also means a continued reliance on cost models at least in the initial period.

With this in mind, Commission has limited the possible approaches to indicative pricing to three main alternatives:

- Continuous use of an economic cost model to reset prices over a given period;
- Use of an economic cost model to establish a starting point period to which an adjustment factor can be applied;
- Establish both a starting point and an adjustment factor using the outcomes of previous cost modelling work with some limited adjustments going forward.

It should also be noted that an access undertaking can also incorporate any of these approaches in setting access prices.

It is important to note that in using an economic cost model, irrespective of structure, it would be appropriate to incorporate the Commission's current views on methodological issues in relation to the modelling of Telstra's network costs. This is discussed further in section 5.

Regardless of the methodology used, the Commission has the option to set indicative prices at the beginning of each new regulatory period, or at the beginning of the next regulatory period for a number of future periods (eg, 3 or 5 years).

### **3.1. Use of a TSLRIC based economic cost model for each period**

If the Commission were to use an economic cost model for determining prices in each regulatory period (usually one year), it could do so in three ways:

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<sup>33</sup> This would involve the use an existing starting point and to select an average change factor based on previous changes to access rates and adjusting for some expected future trends in traffic and cost relationships

- developing a new TSLRIC model, taking account of lessons, and changes in views since the previous modelling exercise was undertaken;
- modifying its existing TSLRIC model, initially developed by n/e/r/a, and updating it each regulatory period; or
- adopting Telstra's PIE model, or a modified version of the model, populated with the Commission's inputs and other parameters that the Commission deems reasonable.

Overall, the use of economic cost models in each regulatory period is potentially a more robust way of determining indicative prices provided that the models are kept up-to-date and that the inputs required by the models are accurate. However, as the purpose of publishing indicative pricing is to aid parties in negotiations rather than to set the exact price at which services are to be supplied, the need for high levels of accuracy may be lessened. Also, this method is the most costly and time consuming.

As well as needing to be kept up-to-date to preserve their precision, the models are highly sensitive to a number of inputs such as the Weighted Average Cost of Capital ('WACC'), inflation rate and output/demand estimates. While these inputs can be predicted for the coming regulatory period with a reasonable degree of certainty, the confidence of these predictions for the following periods rapidly decreases. As a result, if the Commission decides to publish indicative prices for a number of future regulatory periods together, the case for using economic cost models exclusively to set indicative prices weakens. Even a range of possible prices would be difficult to approximate due to a range of variable inputs.

It is important to note that irrespective of whichever economic model the Commission chooses to utilise in determining indicative prices for access, it is considered that, as far as possible, the modelling process should be open and transparent to public scrutiny.

### **3.1.1. Developing a new TSLRIC model**

The Commission may wish to develop a new TSLRIC model, partly to reflect a refinement in its methodological approach, but more importantly to take account of asset and network architecture changes since the n/e/r/a model was developed in 1998. The Commission is aware that models can be developed to model each service in operation very accurately. These could then be updated at the beginning of each regulatory period to take detailed account of any changes in technology, distribution of services in operation, etc.

The clear advantage of developing a new TSLRIC model and updating it each year is that this is probably the most accurate method of arriving at indicative prices for the PSTN and the ULLS. However, as there are already two models, development of a new model may spark further debate over methodologies. Also, the indicative price arrived at by the model would still depend on the underlying assumptions of the model a number of which have been disputed.

A major problem with the development of a new TSLRIC model is that it would take a considerable amount of time, and is likely to be a costly exercise. The model would also need to be regularly updated and the updating process itself would be time consuming. Issues thus arise over the timeliness of indicative prices derived from this approach.

### **3.1.2. Modifying the n/e/r/a model**

An alternative to developing a new TSLRIC model is updating and modifying the n/e/r/a model used by the Commission in the past to derive PSTN and ULLS prices<sup>34</sup>. In updating the n/e/r/a model, the Commission could decide to keep the main aspects of the model largely intact, and re-run it at the beginning of each regulatory period. The model would be populated with updated traffic forecasts, and revenue and cost information. Some of the required data could be collected from a number of sources, but the majority would be based on Telstra's information.

While this would be a reasonably timely approach, the reliability of the model's estimates would diminish over time, as the model is likely to become dated over the next 3 – 5 years as material changes are made to the operation of the PSTN.

In particular, in order to use the n/e/r/a model in the future for PSTN and ULLS cost determination appropriately, it is considered a more thorough and substantial updating and refinement of the models is required. This would include an updating of input variables, but more significantly, also involve a detailed review of parameter values, including cost-output elasticity relationships, asset valuation and other structural modelling aspects.

Although less costly, and faster than the development of a new TSLRIC model, the above exercise would still take a considerable time to achieve. Further, to ensure a degree of relevance in future periods, the model updating exercise would need to be undertaken at the start of each future regulatory period.

Finally, as in the case of development of a new model, making improvements to the structure and operation of the n/e/r/a model and updating values to apply over the future regulatory periods can potentially be subject to considerable future debate and disputation on cost, modelling and methodological issues.

### **3.1.3. Using an industry developed model**

An alternative approach to deriving indicative prices is to use a more up-to-date TSLRIC-based model developed outside the Commission but largely populated by the Commission's input variables. One such model is the PIE model developed by Telstra as an alternative to using the Commission's n/e/r/a model. Adjustments would need to be made to the PIE model for it to conform to the Commission's views on key methodological assumptions.

Telstra has also developed an updated version of its PIE model (PIE II). PIE II appears to be based on a changed configuration of the PSTN although details of that model have not been released by Telstra. The Commission is prepared to consider the adequacy of PIE II or any other model to assist in the establishment of indicative prices. In determining future access prices, the release by Telstra of some of the key inputs and parameters of that model would lessen the potential for that consideration to be undertaken solely in the context of an access dispute.

Regardless of which model is used, this approach has the advantage that asset and network architecture changes since the n/e/r/a model was developed would be directly taken into

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<sup>34</sup> Different versions of the model were used to derive PSTN and ULLS prices.

account and would arguably better reflect a practical forward-looking network than n/e/r/a model now does. Apart from the requirement of updates to traffic and other input variables from Telstra, this also would require the agreement of the model's owner to release and use its model in this way. It would also mean the model would need to be subject to industry scrutiny.

As with the previous two options, this model would need to be updated with each new regulatory period, however, the initial updating exercise would be significantly smaller and therefore faster.

While this approach seems to be a reasonable compromise between the previous two approaches with respect to the first regulatory period for which indicative prices are set, it runs into the same problems of continuous updating and eventual obsolescence.

### **3.2. Use of a TSLRIC based model as a starting point then applying an adjustment factor**

Using a TSLRIC-based model to calculate indicative prices for all economic periods is the most accurate approach, however, it is also least timely and most costly. One of the alternatives to such an approach is to use a TSLRIC-based model to calculate indicative prices for the initial regulatory period, then in subsequent regulatory periods, rather than updating the model, simply adjust the price by some adjustment factor.

Where prices are being determined via the publication of indicative rates, this approach works well whether the indicative prices are published only for the coming regulatory period or for a number of regulatory periods although the accuracy decreases the further out the indicative prices are forecast.

Apart from allowing the Commission to calculate a point estimate, using an adjustment factor on a starting point could allow for calculation of a range based on an upper and lower limit of key variables (CPI and output estimates). Due to a low number of key variables, the range of possible prices could be narrow enough to have meaning. The range would, however, widen the further into the future indicative prices are set for.

The Commission could also publish a general formula by which it would arrive at these prices. This formula could be used by parties together with their views on the values of key variables (if different from those of the Commission).

#### **3.2.1. Establishing a starting point**

To calculate the starting point, any of the three approaches described in the previous section could be used. The starting point would need a reasonable degree of accuracy, as any errors would be exacerbated when applying an adjustment factor for future periods.

If it were only to be used to calculate a starting point, developing a totally new TSLRIC-based model now becomes even less attractive. The key appeal of developing a new TSLRIC model is its high level of accuracy. However, if the model was only to be used to calculate a starting point and an adjustment factor was applied to that starting point, this level of accuracy would quickly be diminished.

On the other hand, the major weakness of developing a new TSLRIC-based model is the length of time it would take to develop this model and keep it up-to-date. While using the adjustment factor approach would remove the need to update the model, a significant amount of time would still be needed to develop the model initially. Further, it becomes more difficult to justify the cost of developing a new model if it is only do be used as a starting point.

As noted earlier, modifying the n/e/r/a model to determine an appropriate starting point would also take some time, and would reduce the accuracy of the model estimate. As the model estimate would be used as a starting point to which an adjustment factor would be applied to in future periods, the accuracy of future indicative prices could decrease exponentially. While only marginally increasing the timeliness of indicative prices, this approach could potentially have significant impact on their accuracy.

However, using an adjusted version of a more contemporary model largely populated with the Commission's inputs may well be a reasonable method of establishing a starting point. As noted earlier, asset and network architecture changes since the n/e/r/a model was developed would be directly taken into account and would arguably better reflect a practical forward-looking network than n/e/r/a model now does. As the model is structurally more current, the estimate derived from it would be more accurate and arrived at in an opportune manner.

### **3.2.2. Calculating an adjustment factor**

With respect to the PSTN, the adjustment factor can apply to each component (conveyance cost and the access deficit contribution) or to the whole charge. The separate application of an adjustment factor to the conveyance cost and the access deficit contribution (ADC) in the case of the PSTN is preferred given the Government's recent amendment of the retail price control arrangements to allow Telstra to increase its line rental revenue with the effect of eliminating the access deficit over five years. In the case of ULLS charges, only one adjustment factor is needed.

#### ***The PSTN conveyance cost and ULLS charge adjustment factor***

To calculate these adjustment factors, the following need to be considered:

- the change in the consumer price index (CPI);
- the technology factor; and
- the output factor.

The adjustment factor for PSTN conveyance cost and ULLS charge could then be calculated as follows:

$$\text{Adjustment Factor} = 1 + \text{CPI} + \text{technology factor} + \text{output factor}$$

#### ***CPI factor***

The level of inflation in the general economy will have an impact on the price of the services through changes in various input costs. For the purpose of calculating the adjustment factor,



the appropriate change in the CPI is that which eventuated over the previous regulatory period and is relatively simple to obtain.

#### *Technology factor*

From previous pricing work undertaken in relation to Telstra's network costs, the Commission has found that the price of technology, in general, decreases over time (hence the technology factor would be negative). This change in the input costs of providing the services will have an effect on price. Thus, the technology factor reflects the effect of the change in technology on the appropriate unit cost. It is proposed that this factor be calculated as a weighted average of projected annual changes in real asset prices with the weights depending on the contribution of particular asset costs to the total asset cost.

However, technological change may also result in changes in the optimal network profile. Accounting for this issue when calculating the technology factor may make the adjustment factor more accurate, but would significantly protract the process and would involve revisions to the TSLRIC model.

#### *Output factor*

Due to the existence of economies of scale in the provision of these services, the unit cost will vary with the level of output demanded. Thus, the output factor accounts for the changes in unit costs resulting from the change in the output produced (in the case of PSTN the output is the number of call minutes and in the case of the ULLS it is the number of lines). This factor can be calculated using the unit cost elasticity of output and would be positive for a demand fall, and negative for a demand increase.

#### *The ADC adjustment factor*

There are a number of ways of calculating the adjustment factor to be applied to the ADC. The simplest, and least accurate, method is to apply a simple straight-line adjustment path to the ADC starting point which would reduce the ADC to zero over four years. Such an adjustment does not take account of changes in output.

One alternative to the above approach is to apply a simple straight-line adjustment path to the access deficit itself rather than to the access deficit contribution. It is important to note that the level of output will affect the number of relevant units the access deficit is distributed over, and therefore will impact the per-unit cost of providing a service. This method would retain the simplicity of the first option but achieve higher accuracy, as the adjustment factor would now take account of variations in output.

The third approach involves calculating an adjustment factor to be applied to the costs of access and a second adjustment factor to be applied to allowed access revenue. This approach is the most complex. These adjustments would couple to project the access deficit path which could then be used together with output estimates to project the access deficit contribution path (rather than calculating a single ADC adjustment factor). The adjustment factor to be applied to costs of access would be calculated on a basis similar to that of the PSTN conveyance cost and ULLS charge adjustment factors.

### **3.3. Establishing the starting point and the adjustment factor using previous outcomes with limited adjustments**

A further approach is to calculate a starting point by modelling the price for 2002-03 based on prices for 2001-02 that have already been approximated. The 2000-01 PSTN price updated for 2001-02 and 2001-02 ULLS models could be used to calculate the unit cost elasticity of output which, together with the CPI figure, could be applied to determine the appropriate adjustment factor.

In April 2001, the Commission endorsed Telstra's proposed interim pricing of the PSTN for 2001-02. In assessing Telstra's proposal, the Commission determined a rough ADC adjustment path as well as roughly approximating the effect of output changes (numbers of services/calls/minutes of use) on the conveyance cost. This approach could be extended over the next few years and as such would be similar to establishing the starting point and adjustment factor, only these would now be calculated in 2000-01 rather than 2002-03.

Similarly, for the case of the ULLS, the starting point and the adjustment factor could be calculated based on the outputs of the 2001-02 model.

The advantage of this method is that it does not require any substantial revisions to any TSLRIC model and is therefore the quickest of the approaches listed above. However, this approach is also likely to be the least accurate.

### **3.4. Timing and duration**

The Commission sees it has three options regarding the timing of publication of indicative prices and the number of regulatory periods the publication will cover. The Commission may choose to:

- publish indicative prices prior to the beginning of each regulatory period for that regulatory period;
- publish three sets of indicative prices at the start of the next regulatory period which would cover the next three regulatory periods; or
- publish five sets of indicative prices at the start of the next regulatory period, which would cover the next five regulatory periods.

The advantage of the first option is that the indicative prices (or ranges of indicative prices) would be more accurate as they would take account of most recent changes in input variables. On the other hand, the advantage of the last option is that it gives the access provider and access seekers an indication of the Commission's likely position over a longer term, hence aiding them in negotiating longer term contracts and in forming longer term business plans.

The three-year period option is a compromise between the other time options.

## 4. Possible approaches to future pricing of LCS

With respect to the future pricing of LCS, the Commission considers there are two general approaches to calculating indicative prices that could be utilised:

- Continuous use of a retail-minus retail costs methodology to re-calculate prices on a yearly basis with the use of Regulatory Accounting Framework (RAF) information to calculate retail costs.
- Use of a Retail-minus retail costs methodology to calculate a base set of retail costs as a initial starting point to which an adjustment factor can be applied to estimate retail costs going forward.

Both approaches would provide the indicative retail costs for a relevant regulatory period, which could be used along with the retail price of local calls to calculate the wholesale LCS rate under the Retail-minus pricing methodology (see Appendix 1).

### 4.1. Re-calculation of retail cost using the RAF

As explained above, the Commission has previously used a retail-minus retail costs pricing methodology to arrive at indicative prices for Telstra's LCS. In so doing, the Commission has used estimates of Telstra's average retail costs for local calls and line rental as determined by the consultant n/e/r/a in its *Report on the Retail Minus Pricing of Telstra's Local Carriage Service*. This report was prepared under Commission instruction to aid the Commission in applying the pricing principles in resolving arbitration disputes that were outstanding in relation to the LCS at the time.

In estimating Telstra's average retail costs for local calls and line rental, the consultant used Telstra's 1999-2000 regulatory accounts as a starting point. These accounts were prepared in accordance with the Telecommunications Industry RAF. The RAF requires that for each product, such as local calls and basic access, costs be allocated to retail and wholesale activities.

The consultant's analysis was also informed by a retail costs study undertaken by Telstra. In this study, Telstra attempted to estimate 'true' retail costs from the RAF accounts on the basis that the RAF estimates of retail costs include some retail costs that would be incurred by a wholesale-only firm. The consultant focused in large part on reviewing whether Telstra's adjustments to derive 'true' retail costs for local calls and basic access were reasonable.

In arriving at its estimates of retail costs, n/e/r/a accepted various 'unambiguous' wholesale costs included in the RAF retail costs and identified by Telstra as costs that would continue to be incurred by a wholesale-only firm. These broadly comprised costs such as network, installation and interconnection costs. It then canvassed a number of options under which it adjusted the rest of the cost categories that had the effect of increasing the costs allocated to retail activities. Under the preferred option that the Commission has accepted (and which forms the basis of the retail cost estimates used in the Commission's calculations), n/e/r/a treated 100 per cent of all ambiguous RAF retail items as non-incurable where Telstra had not provided convincing analysis to the contrary, and 'scaled-up' particular retail organisational costs to be closer to the average allocation for all other RAF products. In

addition, the consultant identified certain capital financing costs that should have been added to cost at the retail level.

A possible approach is for Commission staff to employ the methodology used by the consultants to analyse and adjust Telstra's retail and wholesale RAF costs to re-calculate LCS prices using a retail-minus retail costs approach on an ongoing yearly basis. The Commission considers that calculating LCS prices in this way provides a degree of robustness to its assessment and views, and is a viable and relatively timely option for deriving and disseminating to the market place relevant information about LCS pricing.

## **4.2. Re-calculation of retail costs using an adjustment factor**

The main alternative to the approach for calculating indicative LCS prices described above is the use of an adjustment factor which can be applied to Telstra's retail costs going forward to calculate prices using a retail-minus retail costs methodology.

This process would initially involve calculating a retail costs starting point with the use of RAF information utilising the general methodology employed by n/e/r/a, to analyse and adjust Telstra's retail and wholesale RAF costs as described above.

To calculate the adjustment factor applied to the retail costs starting point, the following factors need to be considered:

- the change in the CPI; and
- the growth in Total Factor Productivity (TFP).

Thus, the adjustment factor for the retail costs of LCS can be calculated as follows:

$$\text{Adjustment Factor} = 1 + \text{CPI} - \text{TFP}$$

The appropriate change in the CPI is that which eventuated over the previous regulatory period and is relatively simple to obtain.

The TFP component can be used to represent the estimated efficiency gains in Telstra's retail LCS operations. TFP measures changes in output relative to an index number that measures the combined inputs of labour and capital. The changes in TFP reflect changes in the organisation of production or in technology that are not due to variations in either labour or capital inputs. Thus a TFP measure will include the impact of technical progress, economies of scale or of scope and managerial improvements. The value of TFP growth could be determined with reference to past and prospective growth of TFP, as well as reference to international benchmarks.

The retail-minus retail costs methodology for determining LCS prices can be represented by the following simple formula:

$$\text{LCS price}_t = \text{Retail price}_t - \text{Retail costs}_t$$

With:

$$\text{Retail costs}_t = \text{RC}_{t-1} (1 + \text{CPI}_{t-1} - \text{TFP}_{t-1})$$

$\text{RC}_{t-1}$  is the retail costs calculation for the previous period to which the adjustment factor is applied.

Thus, the Commission would in effect provide the starting point for retail costs and the structure of the adjustment factor that would be applied to this base period to obtain retail costs going forward. This information could then be used with the prevailing retail prices to calculate LCS prices during the relevant regulatory period in accordance with the retail-minus retail costs methodology. Under this adjustment factor approach, the retail costs of LCS can be calculated on a one, three or five year path.

## **5. Commission's proposed method**

In light of the discussion in section 4, the following sets out the Commission's current views on the most appropriate method of establishing model price terms and conditions or indicative prices. While the Commission believes these approaches are appropriate for setting such prices, the actual prices themselves cannot bind the Commission in exercising its responsibilities.

### **5.1. Future pricing of PSTN and ULLS**

The Commission's preliminary view is that indicative prices for PSTN and ULLS services should be set by using a TSLRIC-based model as a starting point (price for the first regulatory period) and then applying an adjustment factor to calculate indicative prices for the following periods. It is suggested that the Commission would publish PSTN and ULLS indicative prices for the next three regulatory periods.

#### **5.1.1. Calculation of the starting point**

The Commission proposes that an up-to-date TSLRIC based cost model should be used to calculate the starting point. It believes that using such a model would allow it to provide a reasonably timely estimate while attaining a sufficient degree of accuracy. The Commission is willing to consider the use of Telstra's PIE or PIE II, or any other economic model submitted for consideration, should it be convinced that it better represents the current network structure and traffic paths than the Commission's n/e/r/a model.

Regardless of the model it uses in calculating the starting point, the Commission considers the model should reflect the Commission's key methodological assumptions. Through the original PSTN undertaking, PSTN and ULLS arbitrations, and the review of PSTN decisions by the Tribunal, a number of methodological differences arose between the Commission and

other parties. The Commission's current view on the key methodological assumptions evolved throughout these processes, through careful consideration of views put forward to it by all parties involved, and a number of exhaustive debates. Therefore, the Commission believes its key methodological assumptions are appropriate and should be used in deriving any indicative price. These are noted below.

Any model used should be based on fully distributed regulated service costs. In other words, costs common to provision of regulated services and any other services should be allocated between all those services. This is in contrast to a stand-alone cost approach where common costs are allocated only to the regulated services, or a true 'incremental' cost approach where the regulated service is treated as an addition to existing services and no common costs are allocated to it (see Appendix 1).

### **5.1.2. Calculation of adjustment factor**

With regard to the appropriate adjustment factors, the Commission proposes that the PSTN conveyance cost and ULLS charge adjustment factor be calculated by combining the CPI change, the technology factor and the output factor. To calculate appropriate ADC adjustment factors, the Commission proposes to decrease the access deficit linearly from the starting point until it reaches zero.

Once an access deficit path is determined, access deficit contribution for the forecast period can also be determined using total and interconnection call and minute numbers, together with the appropriate allocation rule.

The Commission suggests it publish sets of indicative prices – a headline PSTN price and ULLS prices disaggregated by connection type and geographic area – for three regulatory periods. The Commission proposes these be point estimates rather than ranges. While the indicative prices are likely to remain relevant when estimated over such a period, they would also allow for longer negotiated outcomes to be reached thus providing for a greater degree of certainty.

### **5.1.3. Model inputs and ACCC current position on pricing principles**

The following section has been included in this paper to provide interested parties with the Commission's current conceptual views about the determination of access costs for the PSTN and ULLS access services. The inclusion of this section is both to provide some context to the discussion of what approaches should be used in the future to set model price terms and also to foreshadow the issues that will need to be discussed in further detail in the next stage of the process in the derivation of the model prices themselves.

The Commission remains prepared to consider alternative views regarding these methodological issues and interested parties are free to either comment on these aspects as part of their response to this paper or alternatively to respond to further Commission invitations at a later stage.

#### ***Model inputs***

All inputs into a cost model used to calculate the starting point should be *ex ante* as *ex ante* inputs best reflect the information set available to the incumbent when making investment decisions about the forecast period.

### *WACC and real options*

One of the key inputs into a TSLRIC based model is the allowed Weighted Average Cost of Capital (WACC). The Commission has considered a number of different opinions and submissions on the appropriate inputs and calculation method, but remains of the view that its WACC estimate is appropriate for the determination of indicative prices. As always, however, the Commission is willing to consider any new arguments for an alternate WACC estimate.

An issue related to the WACC is that of a real option mark-up. The Commission notes a debate is taking place with respect to the use of real options in calculating access prices where it has been argued that a regulated firm should be compensated for loss of an option to defer investment due to regulation. Further, it has been argued that a regulated firm should be compensated for unfavourable risk asymmetries, which are supposed to result from the regulatory regime.

The Commission considers that the argument that an efficient access provider competing in a competitive market would have the option to defer investment has still not been established. It would appear that this option would be reserved to a firm with monopoly power. If so, the real option mark-up would seek to preserve revenues open only to a monopolist so its inclusion in the access charge is likely to be contrary to the long-term interests of end users. Accordingly, it would be difficult to justify the inclusion of such a real option mark-up in the WACC or in determining an indicative price. Further, if there are indeed costs to a regulated firm associated with the loss of an option to defer investment, are there also benefits from investing earlier rather than later which should also be taken into account?

With regard to the asymmetric risk arguments, based on evidence to date, the Commission believes it is unlikely any asymmetric risk disfavouring the access provider would arise from the regulatory scheme as applied by the Commission. The Commission's reliance on data supplied by the regulated entity may, if anything, cause a net benefit to the regulated entity.

### *TSLRIC*

A TSLRIC model should be used to calculate the PSTN conveyance cost, ULLS costs, and average PSTN line costs. The average PSTN line costs would be used in calculating the access deficit contribution starting point following the procedure set out in the Commission's undertaking report<sup>35</sup> with a number of adjustments. These adjustments reflect the revision in the Commission's thinking on the issue, and are set out below.

As noted earlier, the cost model should be based on fully distributed regulated service cost.<sup>36</sup> Currently, the Commission uses a fully distributed PSTN cost model. However, a broader fully distributed cost model could also be used. In such a case, provision of PSTN and ISDN services could be taken into account. The calculation of an access deficit would hence not be limited to considering only PSTN services, but rather PSTN and ISDN services together. Rather than calculating PSTN costs and revenues, PSTN and ISDN combined costs and revenues could be looked at in arriving at the access deficit starting point.

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<sup>35</sup> ACCC, *A report on the assessment of Telstra's undertaking for the Domestic PSTN Originating and Terminating Access services*, July 2000.

<sup>36</sup> For a definition of a 'fully distributed regulated service cost' see Appendix 1.

### *Choice of modelled network*

The Commission is aware that a major issue in setting any starting point using a TSLRIC methodology is which network to model; the access provider's network as it would look if it were optimised, or a pure forward-looking (potential new entrant's hypothetical) network. The Commission has so far preferred to use the former approach. It has been argued, however, that the latter approach is more appropriate to ensure an access seeker's efficient build-buy decision.

There are a number of problems with modelling a pure forward-looking network. First, modelling such a network would result in the access provider recovering that it does not actually incur. Not only will the access provider recover costs it does not incur, but it will do so at the expense of access seekers and, ultimately, end users. This would appear inconsistent with the promotion of long-term interests of end users.

Further, it is doubtful that modelling a pure forward-looking network ensures an efficient build-buy decision in any case. In a sense, the Commission provides the 'buy' option in the build-buy decision while the access seeker models the 'build' option. In forming a view about the 'build' option, the access seeker models a pure forward-looking network as that is what would be built. The Commission, however, has a choice of which network (optimised access provider's network or a forward-looking one) to model.

By modelling an access provider's network as it would look if it were optimised, the build-buy decision facing access seekers is 'build if you can construct a network that is more efficient than what the access provider can do, and buy otherwise'.

On the other hand, if a pure forward-looking network is modelled, the Commission is effectively equating the 'buy' option with the access seeker's 'build' option. Therefore, the decision facing access seekers is 'build if you can construct a network that is more efficient than what the Commission thinks the most efficient network looks like, and buy otherwise'. Modelling of a pure forward-looking network does not seem to ensure an efficient build-buy decision. Rather, it merely provides a costing 'sanity check' for the access seeker if it chooses to build a network. To the extent that the Commission has accurately modelled a forward-looking network, under such an approach, therefore, it would never make any sense for the access seeker to build their own.

Finally, it is worth pointing out that modelling and costing a pure forward-looking network may clash with a number of other regulatory criteria such as the consideration of legitimate business interests of access providers. If such an approach were considered, only costs that would be incurred by a potential new entrant would be modelled and thus recovered by the access provider. As any new access seeker could fully recover its line costs through line charges, it would incur no access deficit. Therefore, there would be no need for the PSTN charge to include an access deficit contribution. This potentially clashes with consideration of legitimate business interests of the access provider.

### *Access deficit*

An access deficit arises when the revenue from line-related charges is insufficient to cover line-related costs. To cover this shortfall, a contribution is made by revenue obtained from calls. The access deficit has arisen due to retail price control arrangements that historically restricted Telstra's ability to increase line rental charges. The Commission has recognised



that a contribution to the access deficit should be made by users of the PSTN (ie, access deficit contribution).

With regard to the appropriate allocation rule for the access deficit, while in its earlier decisions the Commission used a 50:50 rule (50 per cent of the access deficit allocated on a per-call basis and 50 per cent allocated on a per-minute basis), the Commission considers that a 20:80 rule for the purpose of arriving at indicative prices (20 per cent of the access deficit allocated on a per-call basis) should be seriously considered. This allocation rule brings it more in line with Telstra's own retail charging structure.

## **5.2. Indicative pricing of LCS**

In calculating indicative prices for the LCS using a retail-minus retail cost methodology, the Commission can estimate retail costs using either RAF information on a yearly basis or through application of an adjustment factor to an initial starting period. Although both options appear relatively timely, there is also the important issue of providing long-term certainty to the market place, which the application of a three or five year price path approach can address. The Commission believes that the availability of this type of pricing information may encourage market participants to negotiate longer-term commercial agreements. Thus, this may lead to a decrease in the number and the frequency of arbitration disputes notified, in effect reducing the underlying inefficiencies associated with these processes.

In consideration of these factors, the Commission's preferred approach for calculating indicative prices for LCS would involve the use of an adjustment factor applied to retail costs that could then be used to estimate a three-year price path.

This would initially involve calculation of Telstra's average retail costs through the use of RAF information to create a starting point. The preferred three-year price path approach would involve the application of the adjustment factor to the initial base of retail costs to provide retail costs going forward. In practice this would involve obtaining input values such as the previous year's CPI change, as well as a measure of average expected TFP gains for the three-year period. This information could then be utilised to calculate LCS prices with references to the prevailing retail prices.

The Commission considers that this indicative pricing approach provides a considerable level of accuracy, as well as benefits to the market place in terms of timeliness and long-term certainty. The Commission believes that these factors should encourage the resolution of disputes through commercial negotiation and possibly lead to the establishment of long-term commercial agreements between parties.

## 6. Appendix 1

### 6.1. Total Service Long-run Incremental Cost (TSLRIC)

The Commission determined in its July 1997 access pricing principles paper<sup>37</sup> that pricing based on total service long-run incremental cost (TSLRIC) to recover the efficient costs of a 'forward-looking' network will satisfy the broad criteria, including the reasonableness criteria under s. 152AH of Part XIC of the Trade Practices Act.

The concept of TSLRIC can be understood by breaking it up into its components:

- 'Total service' refers to it being the cost of production of an entire service (or a production element) not to the cost of a particular unit. However, with respect to carriage services it is usually expressed on a per-minute or per-line basis by dividing the annual total service cost by the number of minutes carried or, alternatively, by the number of services in operation.
- 'Long run' refers to it being a long-run cost concept in contrast to a short-run one. In the short run the amount of at least one factor of production (usually capital equipment) is fixed, while in the long run all factors of production can be varied.
- 'Incremental cost' means that it is a form of 'marginal cost', although not the more familiar 'marginal cost' of the change in cost incurred through a change in the *amount* of output produced.<sup>38</sup> (This is discussed further below.)
- It is also an attributable cost concept as it refers only to those costs that can be attributed to the production of the service. However, in the case of the PSTN and the ULLS, it is produced using production elements shared with customer access lines and ISDN, and these costs are rolled-in and shared over all lines on a 'fully-distributed cost' basis.
- In practice TSLRIC is usually defined to include a contribution to organisation level costs (TSLRIC+).

Given these attributes TSLRIC can be defined as the total cost (on an annual basis) the firm would avoid in the long run if it ceased to provide the service as a whole.

The TSLRIC of supplying a service can alternatively be expressed as the sum of the operating and maintenance costs, and the capital costs that the firm incurs in providing the service as a whole. *Operating costs* are the continuing operational costs of providing the service, including the labour and materials costs that are causally related to the provision of the service. *Capital costs* comprise the cost of capital (ie, the opportunity cost of debt and equity used to finance the firm) and depreciation (ie, the decline in economic value of assets) of capital that is specific to the production of the service.

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<sup>37</sup> ACCC, Access Pricing Principles Telecommunications – a guide, July 1997

<sup>38</sup> The words 'incremental' and 'marginal' are synonymous and are used interchangeably.

### 6.1.1. Organisation-level costs

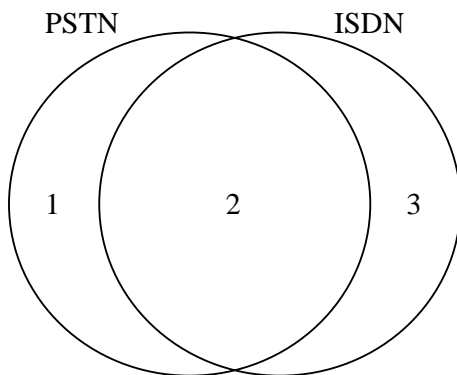
In practice, TSLRIC has been interpreted to include a contribution to organisation-level costs (TSLRIC+). As these costs are not directly attributable to the production of any one service, the allocation of them across services is somewhat arbitrary and there is a range of possible allocation methods. One commonly used approach is the 'equi-proportionate mark-up over directly attributable costs'. This involves measuring the directly attributable costs of each service within the group and allocating the **organisation-level** costs based on each service's proportion of the total directly attributable costs.

In the n/e/r/a model, the organisation-level cost contribution is based on the application of percentage supplements to attributable capital asset value and direct operating and maintenance costs.

### 6.1.2. Organisation-level v Common costs

In the Commission's model (using the PSTN model as an example), **common costs** (ie. costs common to the provision of the PSTN and other services such as the ISDN and leased-line services) are attributed to the PSTN based on the PSTN's usage of common network elements. These costs are a **part of a TSLRIC estimate**. Alternatively, the Commission could have chosen not to assign any common costs to the PSTN, which would bring its estimate closer to an incremental cost concept, or assign all common costs to the PSTN which would estimate PSTN's stand-alone cost

Consider the following diagram where PSTN and ISDN services are supplied over same network elements:



Here (in per call, minute terms),

Area 1 / (Total PSTN calls, minutes) = PSTN marginal cost

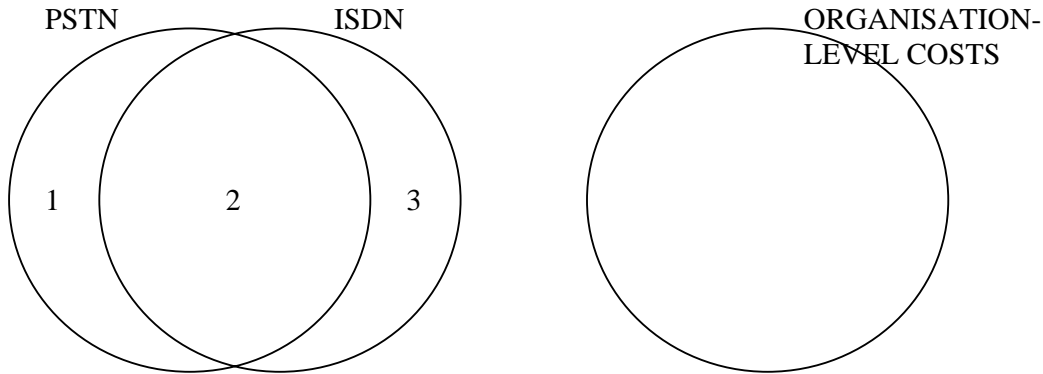
(Area 1 + Area 2) / (Total PSTN calls, minutes) = PSTN stand alone cost

(Area 1 + Area 2 + Area 3) / (Total PSTN & ISDN calls, minutes) = fully distributed cost

(Area 1 / Total PSTN calls, minutes) + (Area 2 / Total PSTN & ISDN calls, minutes) = TSLRIC  
= fully distributed regulated service (PSTN) cost

**Organisation-level costs**, on the other hand, are **not a part of a TSLRIC estimate**. However, the Commission’s PSTN cost model calculates a TSLRIC+ cost, which includes the organisation-level costs that are attributed to the PSTN.

Consider the above diagram, but now with organisation-level costs:



$TSLRIC+ = TSLRIC + \text{proportion of organisation-level costs that are allocated to the PSTN service}$

### 6.1.3. Use of forward-looking costs

Where there are different production technologies and network configurations — either available or in use — there are alternative ways of evaluating the cost components of TSLRIC. Costs could broadly be based on the actual technology in use, the best-in-use technology or on forward-looking technology (as if the most efficient technology commercially available were used). The Commission’s n/e/r/a cost model draws a distinction between the ‘scorched node’ (rebuilding the existing network configuration up to a certain point/node below which the network is optimised) and ‘scorched earth’ (building from scratch an optimised network) costing bases.

In practice the Commission has tended to take a ‘scorched node’ forward-looking approach, using best-in-use technology. This amounts to a hybrid approach, which combines the best technology currently available commercially (ie, not a pure forward-looking technology approach) with the existing network infrastructure.

### 6.1.4. Access Deficit Contribution

An access deficit arises when the revenue from line-related charges is insufficient to cover line-related costs. To cover this shortfall, a contribution is made by revenue obtained from calls. The access deficit has arisen due to retail price control arrangements that restricted Telstra’s ability to increase line rental charges. The Commission has recognised that a contribution to the access deficit should be made by users of the PSTN (ie, access deficit contribution).

## 6.2. Retail Minus

An alternative approach to TSLRIC is a retail-minus approach. In assessing the appropriate methodology for determining prices for the case of LCS, the Commission, having regard to the relevant legislative criteria, considered a retail-minus approach to be superior to a TSLRIC methodology. This was primarily due to the fact that retail price controls on Telstra mean that there is a possibility that the forward looking costs of a local call (including indirect costs and an access deficit contribution) may be above the maximum price allowed under the retail price controls. Under a retail-minus methodology, the price of the service is determined by deducting the service provider's retail costs from the retail price for a given service.

This methodology can be expressed in a number of ways including 'retail-minus avoidable costs' and 'avoidable costs'. Avoidable costs are regarded as costs that a service provider would avoid, or can avoid, if it ceased provision of retail activities completely in respect of the service in question (eg, local calls).

A distinction can be made between avoidable costs and avoided costs. Avoidable costs are the costs that a service provider could avoid if it ceased retail operations completely, whereas avoided costs are those costs that the service provider *actually* avoids when it ceases retailing to the end-users who are now supplied by its competitor.

The Commission, in issuing its report<sup>39</sup>, acknowledged that the terminology 'avoidable costs' is capable of creating the impression that the service provider can avoid those costs, when in reality this may not occur. Consequently, the Commission chose to express the methodology as 'retail-minus retail costs'.

The Commission notes that in a competitive market, in the absence of retail price regulation, the retail-minus price and TSLRIC-based price should converge.

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<sup>39</sup> ACCC, *Local Carriage Service pricing principles and indicative prices – Final Report (Revised)*, April 2000