



De-averaging ULLS prices

A report for Optus
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Table of Contents

1. Summary	1
1.1. Background	2
1.2. Approach used by the ACCC to generate de-averaged ULLS prices	3
1.3. Inconsistency between the model's implementation and the ACCC's objectives	4
1.4. Indicative prices revised to be consistent with the ACCC's objectives	5
2. The ACCC's objectives in setting de-averaged prices	6
3. How the ACCC estimates geographically de-averaged ULLS prices	7
3.1. The annual revenue requirement is determined	7
3.2. The revenue requirement is allocated between services	7
3.3. Average regulated prices are calculated	9
3.4. Geographically de-averaged ULLS prices are calculated	9
3.5. Price (averaged unit cost) relativities estimated using the PIE II cost model	10
4. Consequences of the Draft Report's approach	13
4.1. The approach to de-averaging results in prices that are not cost reflective	13
4.2. A separate RAB for ULLS which is not based on the assets used to provide those ULLS	14
4.3. Overall prices will not be consistent with the change in revenue requirement	15
4.4. Implications for overall cost recovery	17
5. The Draft Report's discussion of the problem	18
5.1. Cost information exists to achieve prices that reflect a correct allocation	19
5.2. The offsetting effect of fibre on the cost of other services	20
6. Revised indicative prices	21



Table of Figures

Figure 1: ACCC's proposed indicative prices for WLR and ULLS.....	3
Figure 2: Cost allocation approach.....	8
Figure 3: Average allocation factors over the estimation period, 2010-11 to 2013-14.....	8



Table of Tables

Table 1: Amended ACCC prices using SIO-weighted average, non-confidential	5
Table 2: Assumed opening asset base using Pie II cost model values	16
Table 3: Assumed price trends of asset classes	16
Table 4: Amended ACCC prices using SIO-weighted average, non-confidential	22
Table 5: Amended ACCC prices using SIO-weighted average, confidential	22



1. Summary

1. In this report, we identify a significant problem with the way that the de-averaged unconditioned local loop service (ULLS) indicative prices have been calculated in the ACCC's draft report, *Review of the 1997 telecommunications access pricing principles for fixed line services* ('the Draft Report'), September 2010.
2. The Draft Report's error is to assume a more costly profile for ULLS customers in forming its revenue requirement for the service than is actually the case. By requiring this amount to be recovered from existing users, de-averaged ULLS prices at each band are overestimated by approximately 70% relative to cost reflective levels.
3. It is possible to illustrate the nature of the problem by reference to a highly simplified example. Suppose that Australia consists of two regions with the same demand. Region A is cheap to serve and all customers in that region take the ULL service. On the other hand, Region B is expensive to serve and no customers in that region are served by ULLS but instead take Telstra's own retail service. In calculating the revenue requirement for ULLS, the ACCC's approach in the Draft Report ignores the actual geographic distribution of ULL services skewed towards the low cost region and assumes ULLS customers are much more evenly distributed between Regions A and B. By doing so, the ACCC calculates a revenue requirement that is too large, given the actual cost of serving ULLS customers who are only in Region A.
4. The ACCC next wants to set ULLS prices in Regions A and B that reflect the cost of service in each region. The ACCC decides to set de-averaged ULLS prices in Regions A and B which in aggregate fully recover the calculated ULLS revenue requirement whilst reflecting cost differences between the regions. Since all existing ULLS customers are in Region A, but the revenue requirement reflects the cost of providing ULLS across Regions A and B, the ACCC ends up putting forward a price for Region A which is much higher than the unit cost of providing ULLS to a customer in Region A. Since the nominal price for Region B is set based on the price in Region A scaled up by the cost difference between the regions, it is also higher than the (already expensive) costs of serving that region. In essence, this divergence between costs and proposed prices is the problem examined in this report.
5. The effect of setting ULLS prices too high is two-fold. There will be direct harm to allocative efficiency in respect of existing ULL services taken in region A. However, there will also be potential harm to customers in region B, who do not take ULLS, because the pricing of the incumbent's internal access services is not constrained to the extent that it would be by truly cost-reflective prices.
6. We note that there are two possible methods by which it is possible to remedy this problem. The first is to take into account the actual distribution of customers between regions and the costs of serving each region in calculating the ULLS revenue requirement. In practice, this could involve adding considerable complexity to the modelling in order to arrive at the correct allocation.



7. The second solution, which is recommended in this report, would be relatively straightforward for the ACCC to implement. It requires the ACCC to calculate de-averaged prices for ULLS not by reference to recovering the required revenue from existing ULLS customers in Region A, but by recovering it from an assumed distribution of ULLS customers across regions consistent with the assumption used in forming the revenue requirement. In practice, this means that the ULLS revenue 'requirement' calculated by the ACCC cannot be recovered from existing ULLS services. This is consistent with the fact that that this revenue requirement assumed a more costly distribution of ULLS services than actually exists, and so ought not to be recovered in its entirety from these users.
8. Under either methodology, significant reductions in ULLS indicative prices from the levels proposed by the ACCC will be required.

1.1. Background

9. In the Draft Report, the ACCC proposes to establish a "locked-in" Regulatory Asset Base (RAB) of fixed line assets from which to calculate indicative prices. This would represent a significant change from the existing process of periodically determining an asset base by reference to optimised replacement costs.
10. The ACCC proposes to set 'de-averaged' prices for ULLS which reflect differences in cost in providing the service in different geographic areas. The ACCC proposes to define its geographic areas consistent with its existing four band structure. In proposing the use of de-averaged prices for ULLS, the ACCC has indicated its objectives to:
 - promote allocative efficiency through setting prices in line with the real underlying costs of ULLS;
 - improve the viability of ULLS-based investments in urban areas and reduce the risk of inefficient bypass (while not impacting competition in other areas as ULLS is generally not technically viable in those other areas); and
 - maintaining a four band pricing structure to provide stability at a time of significant industry change.¹
11. The Draft Report proposes initial RABs of \$7.5 billion for the customer access network (CAN) and \$5.8 billion for the core network. From these asset bases and with other input information, the ACCC estimates draft indicative prices for regulated ULLS and wholesale line rental (WLR) services as reproduced from the Draft Report in section 0 below.

¹ The Draft Report, p.53-54.



Figure 1: ACCC's proposed indicative prices for WLR and ULLS

Summary—Current indicative prices compared with draft indicative prices from 1 January 2011 to 31 December 2014		
	Current indicative prices	Draft indicative prices based on initial RAB of \$7.5b
<i>ULLS access prices with geographically de-averaged prices</i>		
SIO-weighted national average (per line per month)	\$28.50	\$28.42
Band 1	\$6.60	\$6.50
Band 2	\$16.00	\$16.00
Band 3	\$31.30	\$31.00
<i>Band 4 (nominal)</i>		\$100
WLR (per line per month)	\$25.57 (Homeline) \$26.93 (Businessline)	\$20.00 (nationally averaged)
LSS (per line per month)	\$2.50	\$2.50
PSTN OTA (per minute)	1c (headline rate)	1.1c
LCS (per call)	17c	7.0c

Source: ACCC Draft Report, p.55

12. Our key finding in this report is that the way that geographically de-averaged ULLS prices has been calculated in the model is inconsistent with the ACCC's stated objectives to set a revenue requirement for the CAN based on the above RAB and to set de-averaged prices for the ULLS in line with its view of cost differences. By our calculation, the ACCC's approach results in estimated ULLS prices in Band 2 which are approximately 70 percent higher than the price level which is consistent with the ACCC's objectives.

1.2. Approach used by the ACCC to generate de-averaged ULLS prices

13. The approach applied by the ACCC in the Draft Report to generate de-averaged prices is essentially a four step process (which we explain in greater detail in section 0 below). The component steps of its calculation are to:
 - i. calculate the total revenue requirement for each component asset of the RAB based on an allowed WACC, straight-line depreciation and allowed expenditures;
 - ii. allocate this total revenue requirement to regulated services using allocation factors (which do not reflect geographic differences in cost for each service);
 - iii. calculate national average prices for regulated services (including ULLS and WLR) by dividing the total revenue requirement by expected demand for those services; and
 - iv. calculate de-averaged ULLS prices by assuming that new prices are in proportion to current prices, and choosing an adjustment so that the revenue requirement allocated to ULLS is recovered over existing services.



1.3. Inconsistency between the model's implementation and the ACCC's objectives

14. In generating de-averaged ULLS prices we believe the ACCC's approach is inconsistent with its stated objectives of setting prices which achieve present value compensation over the life of the CAN equal to the RAB while reflecting the price relativities between each band of the PIE II model.
15. In the fourth and final step of its calculation, the ACCC calculates de-averaged ULLS prices so as to allow the ULLS revenue requirement to be recovered over existing ULLS services. It does this by de-averaging prices using the price relativities from the Pie II cost model weighted by where existing services are taken. The allocation factors used by the ACCC in the second step of its calculation are derived without reference to location so that they effectively assume that the distribution of ULLS connections is the same as for all services in operation (ULLS, WLR and internally provided retail access services ("internal access")).
16. However, ULLS services are overwhelmingly (94%) taken in Band 2. The result of the ACCC's application of Step (iv) is to recover all the costs allocated to ULLS almost exclusively from Band 2. However, this is inconsistent with the fact that the overall spread of services upon which the allocation of costs at Step (i) is predicated, is significantly more weighted toward Band 3 and hence is more costly to serve.
17. In our view, it is not logically consistent to determine the revenue requirement for ULLS without regard to where those services are taken while at the same time using a de-averaging method weighted by where services are taken.
18. The result of this inconsistency of assumptions is that the Band 2 ULLS prices are not in any way reflective of the cost of providing the ULLS in Band 2. In fact, because ULLS is overwhelmingly taken in Band 2 the ULLS price determined using the ACCC process are effectively the average cost of providing ULLS across all geographic areas.
19. Moreover, the ACCC's new lower RAB estimate suggests there should be a reduction in annual allowed revenue (or total revenue requirement) from the customer access network (CAN) when compared to the ACCC's TSLRIC approach based on the Pie II cost model which had an asset value of \$33 billion² – however, this will not be achieved with the proposed (de-averaged) prices. As ULLS charges will be a constraint on pricing of internal access, Telstra's overall expected revenue recovery from the CAN will perversely be unchanged despite the reduction in the asset value and revenue requirement.

² ACCC, *Assessment of Proposals: National Broadband Network Process*, January 2009, posted on Sydney Morning Herald website, p.60.



1.4. Indicative prices revised to be consistent with the ACCC's objectives

20. The ACCC's model can be implemented more in line with the ACCC's objectives by changing Step (iv) of its calculation so that prices are set so as to recover the revenue requirement allocated to ULLS under the notional assumption that service weightings across bands equal to total SIO weightings.³
21. This 'top down' correction to the model does not require the ACCC to obtain routing factors which contain geographic information to allocate costs to the ULLS, but means that the ACCC would be correctly utilising the geographic cost differences implied by the Pie II cost model's price relativities. It would also be more consistent with the Pie II cost model's approach to calculating cost difference between geographic areas.
22. Revised ULLS prices calculated using non-confidential information sourced from the Draft Report are shown at Table 1 below. More accurate prices can also be derived using confidential figures from the Ovum BBM and these are shown at Section 0 of this report.⁴

Table 1: Amended ACCC prices using SIO-weighted average, non-confidential

	ULLS %	All SIOs %	Pie II prices	ACCC prices	Adjusted prices
Band 1	4.24%	2.61%	\$6.60	\$6.50	\$3.84
Band 2	94.33%	67.33%	\$16.00	\$16.00	\$9.32
Band 3	1.41%	20.12%	\$31.30	\$31.00	\$18.22
Band 4	0.01%	9.93%	\$100.00	\$100.00	\$58.22
ULLS weighted average				\$15.82	\$9.21
SIO weighted average				\$27.11	\$15.82

³ Ideally, the weightings across bands would be equal to the weightings for all potential ULLS. That is, excluding those services which are not capable of being used as a ULLS (eg, with pair gain systems between the exchange and the customer).

⁴ The divergence between the prices estimated based on non-confidential information and those based on confidential information arises because the ACCC's proposed indicative prices are set at levels that differ considerably from the levels of cost that it actually estimates within its own modelling.



2. The ACCC's objectives in setting de-averaged prices

23. In its Draft Report, the ACCC sets out the objectives that it seeks to achieve with its proposed access pricing principles and indicative prices:⁵

"The ACCC considers that it should have regard to the object of Part XIC of the TPA, which is to promote the LTIE of carriage services or of services provided by means of carriage services.

Part XIC of the TPA provides that, when determining whether something promotes the LTIE, regard must only be had to the extent to which it achieves the following objectives:

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

24. In interpreting these statutory objectives, the ACCC sets itself four policy objectives.⁶
- i. Cost recovery. Access prices should be sufficient that an access provider can expect to recover its efficiently incurred costs of providing the access services, including a reasonable rate of return.
 - ii. Efficiency and innovation. The methodology for determining prices should provide incentives for the access provider to reduce costs and improve productivity.
 - iii. Transparency and certainty. The methodology should be transparent and provide certainty and stability for access providers and seekers.
 - iv. Competitive pricing. Prices should be structured so as to encourage the efficient use of and investment in access infrastructure.
25. Having regard to these objectives, the ACCC proposes to set de-averaged indicative prices for the ULLS. It considers that this will set prices close to "real, underlying costs" and thereby avoid significant distortions to allocative efficiency. It also notes that setting averaged prices would likely result in inefficient bypass in urban areas because of the extent of the differences in cost between regions.⁷ Thus setting de-averaged prices will best meet the ACCC's policy objectives of competitive pricing, as well as providing for regulatory stability.

⁵ Draft Report, p.12

⁶ Draft report, pp.13-14

⁷ Draft Report, p.53



3. How the ACCC estimates geographically de-averaged ULLS prices

26. The overall approach by which the ACCC converts the RABs into geographically de-averaged ULLS prices is not summarised in a single location in the Draft Report. We explain the sequence of key steps in this section. The component steps of its calculation are to:
- i. calculate the total revenue requirement for each component asset of the RAB based on an allowed WACC, straight-line depreciation and allowed expenditures;
 - ii. allocate this total revenue requirement to regulated services using allocation factors (which do not reflect geographic differences in cost for each service);
 - iii. calculate national average prices for regulated services (including ULLS and WLR) by dividing the total revenue requirement by expected demand for those services; and
 - iv. calculate de-averaged ULLS prices by assuming that new prices are in proportion to current prices, and choosing an adjustment so that the revenue requirement allocated to ULLS is recovered over existing services.
27. These steps are outlined in further detail below.

3.1. The annual revenue requirement is determined

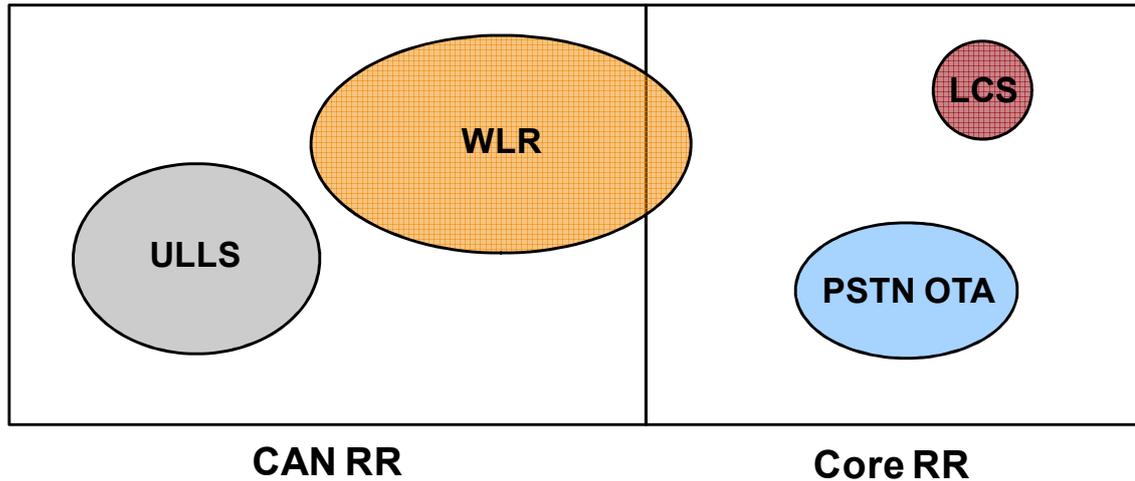
28. The annual revenue requirement is determined from the RAB as the sum of:
- a return on capital, being WACC applied to the RAB;
 - a return of capital, being straight line depreciation of the component assets of the RAB;
 - an allowance for expenses incurred in operating and maintaining the network; and
 - an allowance for tax payable, less the valuation of imputation credits.
29. These steps are clearly set out in the 'Revenue Requirement' sheet of the Ovum BBM. In conducting these steps, a separate revenue requirement is calculated by the ACCC for each class of assets within the RABs and for each year of the estimation period.

3.2. The revenue requirement is allocated between services

30. Once the revenue requirement is calculated, costs are allocated to the regulated services, including ULLS and WLR, by the use of allocation factors. The remainder is implicitly allocated to unregulated services, ie, internal access, which can be thought of as Telstra's internally provided ULLS, WLR and PSTN services.

31. This style of allocation is illustrated in Figure 2 below. Although the Ovum BBM only contains allocation factors that define revenue requirements for each of the regulated services, the remaining revenue requirement (RR) for the CAN and the core network is implicitly allocated to internal access, shown as the white space in Figure 2.

Figure 2: Cost allocation approach



32. The ACCC Draft Report and Ovum's BBM both describe the allocation factors that have been used for each year of the estimation period. For convenience, we show below the average allocation factors that have been used over the four year estimation period.

Figure 3: Average allocation factors over the estimation period, 2010-11 to 2013-14

Code	Asset Class	S01	S02	S03	S04
		Unconditioned Local Loop Service	Wholesale Line Rental	PSTN Originating & Terminating Access	Local Call Service
CAN Asset class					
CA01	Ducts and pipes	0.097	0.121	-	-
CA02	Copper cables	0.097	0.121	-	-
CA03	Other cables	-	0.116	-	-
CA04	Pair gain systems	-	0.115	-	-
CA05	Radio CAN	-	-	-	-
CA06	Other assets	0.107	0.107	-	-
CA07	Spare CAN Asset Class 07	-	-	-	-
CA08	Spare CAN Asset Class 08	-	-	-	-
CA09	Spare CAN Asset Class 09	-	-	-	-
CA10	Spare CAN Asset Class 10	-	-	-	-
Core Asset class					
CO01	Switching Equipment - Local	-	0.02	0.09	0.06
CO02	Switching Equipment - Trunk	-	-	0.18	0.04
CO03	Switching Equipment - Other	-	-	0.18	0.06
CO04	Inter-exchange Cables	-	-	0.03	0.01
CO05	Transmission Equipment	-	-	0.06	0.03
CO06	Radio Bearer Equipment	-	-	0.04	0.02
CO07	Satellite Equipment	-	-	0.04	0.02
CO08	International Network Cables	-	-	0.02	0.01
CO09	Spare Core Asset Class 09	-	-	-	-
CO10	Spare Core Asset Class 10	-	-	-	-

Source: Ovum BBM



33. Figure 3 indicates that in relation to the revenue requirement determined in respect of duct and pipe assets, the ACCC allocates 9.7% of such costs to be recovered from ULLS prices and 12.1% to be recovered from WLR prices.
34. The difference between the allocation factors for ULLS and WLR in the 'ducts and pipes' and 'copper cables' categories is explained by the higher expected demand for WLR over the period from 2010-11 to 2013-14. For these categories, ULLS and WLR are allocated the same absolute level of costs per line.⁸ There are additional categories where ULLS does not receive an allocation of costs, or where it receives a lower than proportionate share of costs.
35. Importantly, the entire asset base (and consequent revenue requirement) is not shared between only the ULLS and WLR services. Around 80% of the costs in the CAN and an even higher proportion of core network costs are not recovered from these services. This is not to say that this proportion of costs cannot be recovered, it implies that recovery of this proportion of costs will be through the internal provision of network and wholesale products to Telstra's own retail business (internal access).

3.3. Average regulated prices are calculated

36. The allocation process results in an annual revenue requirement for each class of assets being determined for each regulated service, including ULLS and WLR. The sum of these individual requirements is the total annual revenue requirement for that service.
37. The national average price for each regulated service in each year is calculated simply as the total revenue requirement for that service divided by the expected demand for that service. This figure is further divided by 12 to calculate a monthly price. The Ovum BBM estimates a national average price for WLR across the estimation period of [cic] per line per month, and [cic] per line per month for ULLS.

3.4. Geographically de-averaged ULLS prices are calculated

38. Up to this point, all calculations are set out in the Ovum BBM and can be replicated with access to Telstra's confidential information used by the ACCC to set prices. However, the final step in the ACCC's calculation of ULLS prices occurs outside the Ovum BBM and is described on the ACCC's website.⁹
39. The ACCC's policy is to set nationally averaged WLR prices but de-averaged ULLS across the same bands (1-4) that these prices are currently set. Based on the calculations above, the ACCC sets a nationally averaged WLR price of \$20 per line per month. In order to estimate de-averaged ULLS prices, however, further calculations are required.

⁸ Draft Report, p.91.

⁹ <http://www.accc.gov.au/content/index.phtml/itemId/951666>



40. Despite its aim to estimate de-averaged prices for the ULLS service, the Draft Report argues that the ACCC has no reliable up-to-date costing information which would inform an allocation of costs across Bands 1, 2, 3 and 4. However, the existing de-averaged ULLS prices incorporate information from the Pie II cost model that does reflect these differences. The ACCC has therefore estimated de-averaged band prices for ULLS applying a proportional change to current prices that results in Telstra recovering the ULLS revenue requirement where those services are currently taken.
41. This is confirmed on the ACCC's website where it states:

“As stated in the draft report (page 101), the ACCC has de-averaged the estimated average ULLS price by applying the existing relativities between the existing Bands 1-3 prices.

The existing band relativities are applied to the draft ULLS average price. The calculation is as follows:

Band 1 price = existing Band 1 price/ existing demand-weighted average price X draft average price

Band 2 price = existing Band 2 price/ existing demand-weighted average price X draft average price

Band 3 price = existing Band 3 price/ existing demand-weighted average price X draft average price

Notional Band 4 price = \$100

In calculating the demand-weighted average price, the ACCC used the demand numbers in the June 2010 CAN RKR.”

3.5. Price (averaged unit cost) relativities estimated using the PIE II cost model

42. It is helpful to understand how the existing band price relativities are derived. The ACCC indicates that these are sourced from the Pie II cost model. A public description of the Pie II cost model indicates that the costs allocated to each band are determined on the basis of Exchange Serving Areas (ESAs) before being aggregated into the four bands as follows:¹⁰

92 The cost pool that is used to derive the ULLS network costs is the total PSTN CAN cost pool, excluding the cost of PSTN line cards and excluding the costs of radio access technologies. As RSS technology is not used within the model, it has been assumed that services connected to the Network Unit provide the best analogue.

¹⁰ Telstra, *Telstra's Submission in Relation to the Methodology used for Deriving Prices Proposed in its Undertakings dated 9 January, 2003*, 13 February 2003, ANNEXURE A - DESCRIPTION OF PIE II MODEL, <http://www.accc.gov.au/content/index.phtml/itemId/423325>



93 The average unit cost of providing a ULLS connection to a Network Unit is calculated for each ESA as follows:

(a) costs associated with **distribution cable and distribution ducts and conduits are allocated between all copper based services within the ESA to determine the “copper cost” per service;**

(b) costs associated with pillars are allocated between two cost pools, one associated with services connected to Network Units and the other associated with services connected to remote CMUX Units only;

(c) costs associated with main cable and main cable ducts and conduits are allocated to the cost pool associated with services connected to Network Units only;

(d) costs allocated to services connected to Network Units (distribution cable, distribution ducts and conduits, pillars, main cable and main cable ducts and conduits) are totalled and divided by the number of services connected to the Network Units in the ESA.

94 **Each ESA is classified into one of the 4 ULLS bands, which allows the total ULLS cost for each band and the total potential ULLS SIOs in each band to be determined. Dividing the total costs by the total SIOs in each ULLS band gives the average annual cost for ULLS in each band, which is then converted to a monthly charge by dividing by 12.**

95 The costs in each band can then be either left as a deaveraged cost, or be combined to give an average across Bands 2-4 as well as a national average cost.

96 Costs that are specific to ULLS are not calculated as part of the PIE II model, as they are not part of the PSTN. [Emphasis added]

43. In the Pie II cost model, the cost pool for ULLS network costs is made up of costs related to all ‘copper-based services’ or *potential* ULLS connections (ie, being those located at an exchange, or more precisely a Network Unit within an exchange). That is, the ‘average unit cost of providing a ULLS connection’ is calculated in the Pie II cost model is not just the cost of *actual* ULLS connections, but is the cost of all *potential* ULLS connections (including internal access services). The cost pool for *potential* ULLS connections includes all main cable costs and an allocation of distribution cable and pillar costs to services connected to an exchange.¹¹

¹¹ It excludes line card costs and the cost of radio technologies which would presumably be allocated to WLR and internal access.



44. Notably, when calculating the band prices¹² the total cost relating to all *potential* ULL services is divided by the number of *potential* ULL services in each band. Therefore, the band prices, and the relativities between prices across bands, reflect the differences in average cost of all copper-based services.
45. As such, in the Pie II cost model the copper SIO-weighted average of the ULLS prices across bands is equal to the *simple* average unit cost of providing ULLS.¹³ In contrast, as we discuss further below, using the ACCC's process the *simple* average ULLS cost is substantially below the SIO-weighted average of the ULLS Band prices.

¹² The prices are simply the average cost in each band.

¹³ Where the simple average is calculated as the total costs relating to ULLS (as a result of allocating between ULLS, WLR and internal access without having regard to geographical cost differences) divided by the total number of ULLS services.



4. Consequences of the Draft Report's approach

46. The approach adopted in the Draft Report leads to de-averaged ULLS prices that are (i) not cost reflective in the manner the ACCC intends; (ii) inconsistent with the reduction in the overall CAN revenue requirement from existing levels; and (iii) inconsistent with the calculation of *the Pie II* price/cost relativities. The consequence of these errors is that the ACCC has overestimated ULLS prices in each band by approximately 70%, relative to cost reflective levels. Overestimating prices to this extent is inconsistent with the ACCC's own objectives and benchmarks for allocative efficiency in the provision of ULLS and promoting competition for retail telecommunications products by artificially increasing costs for access seekers.

4.1. The approach to de-averaging results in prices that are not cost reflective

47. The ACCC has indicated a policy of setting de-averaged prices for ULLS to achieve efficiency objectives. The ACCC considers that efficiency is served by prices reflecting 'real underlying cost'. The ACCC considers that:¹⁴

... nationally averaged pricing for ULLS at this stage would not promote the economically efficient use of and investment in infrastructure. Nationally averaged prices would depart significantly from the real underlying costs of the ULLS, thereby distorting allocative efficiency. Price averaging does not distort allocative efficiency greatly if cost differentials are reasonably small. However, in the case of the ULLS, the cost differentials between bands are sufficiently large to justify de-averaged prices.

Averaged charges in urban areas would result in inflated costs which would in turn increase the marginal cost of the ULLS and negatively impact on the viability for ULLS based investments. It is also likely that inefficient bypass would occur in urban areas due to the large differential between a nationally averaged ULLS price and the actual costs of providing ULL services...

48. The ACCC notes that it did not have sufficient geographically differentiated information to allocate costs between services directly for the each band. Instead it has calculated a *simple* average cost for each service based on allocating the total revenue requirement between services for the broad asset classes (using routing factors which do not contain geographic information) and dividing that by the number of services. It has then sought to de-average ULLS average costs based on the price relativities derived from the existing prices (which in turn were derived from the *Pie II* cost model).
49. However, because the Draft Report's approach to de-averaging uses weights based on where existing ULLS are taken it gives the largest allocation of costs to Band 2. This effectively ensures that the de-averaged price for Band 2 is equal to the average cost. This is the result even though the underlying cost in Band 2 may be significantly

¹⁴ ACCC Draft Report, page 53.



less than the average cost. Using this de-averaging approach a high price would be set in the band where most services are taken even if the 'real underlying costs' in that band were low.

50. This can be readily seen by imagining the scenario where 99.9% of ULLS connections were taken in Band 1. With precisely the same RAB and revenue requirement as per the Draft Report, the ACCC process of ULLS demand weighted de-averaging (using the price relativities from the Pie II cost model) would result in a Band 1 price of around \$15, a Band 2 price of around \$36, and a Band 3 price of around \$70.
51. A further implication of the Draft Report's approach is that its de-averaged prices for ULLS in each band will change if the geographic distribution of demand for ULLS changes, even if the 'cost' of services each band (and the annual revenue requirement) does not change. For example, if there was a significant shift in demand for the ULLS in Band 3 then following the ACCC's process, the price in Band 2 would fall. This strongly suggests that the approach in the Draft Report does not robustly calculate cost reflective prices.
52. It also suggests that the ACCC's approach may introduce perverse incentives into the access pricing regime. For example, the economics of an access seeker investing in DSLAMs in Band 3 would be affected by the extent of its use of the ULLS in Band 2 (as greater demand in Band 3 would lower the Band 2 ULLS price).
53. Ultimately, because of the current distribution of ULLS take-up the Draft Report's approach does not actually arrive at a 'de-averaged' price at all; the Band 2 price is equal to the average cost, and all other prices are set relative to this. However, the cost of serving Band 2 is considerably less than the average cost and so the ACCC has significantly over-estimated all ULLS band prices, relative to its benchmark for cost reflective pricing.

4.2. A separate RAB for ULLS which is not based on the assets used to provide those ULLS

54. As discussed, the process adopted by the ACCC sets de-averaged ULLS prices so as to allow the ULLS revenue requirement to be recovered over existing ULLS services. This means that in effect what the model does is create a separate RAB for the ULLS and recovers that RAB solely through demand for the ULLS.
55. The concern with this approach is that the RAB is created without regard to the actual assets used to provide the services from which that RAB will be recovered. This is because the separate 'ULLS' RAB is created using generic allocation factors which do not take into account the fact that ULLS predominately uses assets located in lower cost areas. The model implicitly assumes that all services have the same distribution of demand by location.
56. However, ULLS services are overwhelmingly (94%) taken in Band 2 only. The result of the Draft Report's application of step (iv) is to allow Telstra to recover all the costs



allocated to ULLS almost exclusively from Band 2. The overall spread of services upon which the allocation of costs at step (ii) is predicated, is significantly more weighted toward Band 3 and hence is more costly to serve. This can clearly be seen in the ACCC's calculation of the SIO-weighted national average ULLS price of \$28.42 per line per month, which is weighted closer to its Band 3 charge of \$31.00 per line per month than the Band 2 charge of \$16.00 per line per month.

57. The result of this inconsistency of assumptions is that the total revenue requirement allocated to ULLS assumes a more costly spread of services than is actually taken. Therefore, recovering this revenue requirement from existing users of the ULLS will result in prices being set above cost.
58. From the above logic, it can be understood that the ACCC's revenue requirement for ULLS is not a revenue requirement that should be recovered from existing users of the service. Rather, it is a revenue requirement set under the notional assumption that the geographic spread of ULLS services is the same as that for all copper services. In the circumstances that exist, where ULLS customers are predominantly located in areas that are cheaper to serve, the access provider should not be able to recover the entirety of the calculated revenue requirement from existing users.¹⁵

4.3. Overall prices will not be consistent with the change in revenue requirement

59. A surprising aspect of the ACCC's proposed indicative ULLS prices are that they are, in essence, unchanged from existing prices. This is despite the ACCC proposing a RAB for the CAN of \$7.5 billion, substantially less than the asset value estimated using the Pie II cost model of \$33 billion on which existing ULLS prices are (in large part) based.
60. Clearly the ACCC is proposing several significant changes to the method by which it calculates prices from the raw asset valuation. In particular, the methodology that it proposes in the Draft Report results in a depreciation profile that will bring forward cost recovery relative to the back-loaded recovery profile employed for the Pie II model. However, these asset values define the level of future cost recovery for existing assets across all services provided using those assets, including externally provided services such as ULLS and WLR and internal access. As such, we would expect the existing prices for CAN-based services to recover 340% more than the ACCC's proposed prices ought to recover over the life of network assets. It therefore seems implausible that these prices could be so similar, even given the long life of these assets.
61. The proposed RAB for the CAN is \$7.5 billion, whereas the Pie II cost model estimates a CAN asset value of \$33 billion based on replacement costs.¹⁶ The revenue requirement using an initial revenue asset value of \$33 billion can be roughly

¹⁵ The part that it does not recover from this service should properly be recovered from other services that have a more costly profile of customers, such as the internal access service.

¹⁶ ACCC, *Assessment of Proposals: National Broadband Network Process*, January 2009, posted on Sydney Morning Herald website, p.60.



estimated using the Ovum BBM. In order to do this we must assume a depreciation profile which reflects an expectation of an updated replacement cost valuation (ie, a tilted annuity).

62. Adopting the breakdown of asset categories reported by the ACCC for the \$33 billion CAN asset value (see Table 2)¹⁷ and deriving tilted price trends from the Analysys model as a weighted average over categories that were equivalent to the broad categories in the Ovum model (see Table 3), we can calculate a rough estimate the total revenue requirement for the CAN over the four years.¹⁸

Table 2: Assumed opening asset base using Pie II cost model values

Asset class	Value (\$m)
Ducts and pipes	15,040.3
Copper cables	12,348.7
Other cables	0
Pair gain systems	1,792.4
Radio CAN	3,849.1
Other assets	0

Table 3: Assumed price trends of asset classes

Asset class	Value (\$m)
Ducts and pipes	3.63%
Copper cables	1.79%
Other cables	2.50%
Pair gain systems	2.50%
Radio CAN	2.50%
Other assets	2.50%

63. We estimate that the total revenue requirement from the CAN over the four years using this approach would be around 65% greater than the total revenue requirement using the approach adopted in the Draft Report (noting that the \$33 billion asset value is around 340% greater than the \$7.5 billion asset value set in the Draft Report). Using the (non-geographic) allocation factors in the Draft Report the \$33 billion asset value translates into a *simple average*¹⁹ ULLS price of around [cic] compared to a *simple average* ULLS price of [cic] using the RAB proposed in the Draft Report.

¹⁷ Ibid.

¹⁸ We have assumed no future capital expenditure consistent with the \$33 billion figure representing a replacement cost. We have also assumed no change to the operating expenses, which might be expected to be lower for a replacement network.

¹⁹ The simple average is the total revenue requirement divided by the total number of ULLS.



64. Yet despite this substantial reduction in the revenue requirement and the average ULLS price, the ULLS price determined by the ACCC for Band 2 is largely unchanged from existing prices. The most likely reason for this is the ACCC's approach to de-averaging prices is inconsistent with the way de-averaged prices were determined in the past.
65. Previously, de-averaged prices were calculated in the Pie II cost model as the revenue requirement for all copper services divided by the number of copper services in each Band. Under this approach the copper SIO weighted average would be equal to the *simple* average (being the total revenue for all bands divided by the number of copper services). Therefore, to work backwards and de-average the *simple* average price it is necessary to weight each band by the copper SIOs to get to a consistent revenue requirement. In contrast, the ACCC model for de-averaging the *simple* average uses weights for each band based on where a subset of copper SIOs (the ULLS) are taken, resulting in an inconsistent total revenue requirement.

4.4. Implications for overall cost recovery

66. The effect of over-estimating ULLS prices is not limited to welfare effects merely on ULLS customers. ULLS is an intermediate good that is used by access seekers to produce retail broadband and telephony products in competition with Telstra's retail products. The prices of ULLS in Bands 1 and 2 in particular are key determinants of the price of retail products in these areas. Excessive ULLS prices will raise costs for access seekers and lead to higher retail prices for broadband and telephony products in these areas.
67. Telstra's recovery of costs on ULLS services is thus linked to its recovery of costs on its internal access services. Over-recovery of costs in ULLS prices will have flow-on effects by allowing Telstra to over-recover costs for providing its internal access services, most particularly in Bands 1 and 2 where the averaged WLR price does not constrain this ability.
68. With the ACCC's proposed prices, too much of the total required revenue is allocated to ULLS services, given the actual geographic distribution of these services. Implicitly, too little of the required revenue is allocated to Telstra's internal access services. However, there would not be any compensating under recovery on these services, because they are not regulated. With increased costs for access seekers, there would be less pressure on Telstra's pricing in the unregulated downstream markets where it is not constrained by WLR or retail price averaging obligations. We would therefore expect to see relative over recovery from urban and metropolitan CAN services resulting from setting ULLS prices too high.
69. On the other hand, setting the correct level of recovery from ULLS services will result in a greater proportion of the revenue requirement being allocated to recovery from internal access services, consistent with the higher cost profile for these services which are more weighted to regional and rural areas.

5. The Draft Report's discussion of the problem

70. The ACCC indicates in an extended passage at pages 91-92 of the Draft Report that it appreciates at a conceptual level the nature of the problem in relation to the modelling of ULLS:

Table A7.2 shows that ULLS SIOs are concentrated in Band 2, which covers the urban areas of capital cities, metropolitan regions and large provincial centres (including the CBD areas not included in Band 1). There is also a greater share of ULLS SIOs in Band 1, which covers the CBD areas of the major capital cities, compared to WLR and other services. Unit costs in Bands 1 and 2 are lower than the national average because the higher population densities and shorter distances to reach customer premises mean less ducts and pipes and copper cables are needed to provide each service.

...

In contrast, a larger percentage of WLR and other SIOs (compared to ULLS SIOs) are provided in Band 3, which covers semi-urban areas including outer metropolitan and smaller provincial towns, and has higher unit costs of service provision. The highest unit costs are incurred in Band 4, which covers rural and remote areas where population densities are low and distances are generally large. A much greater share of WLR and other SIOs are Band 4 than ULLS SIOs.

This implies that the average unit costs of ducts and pipes and copper cables may be lower for providing ULLS than for providing WLR and other services. However, the ACCC does not have cost information by band to enable it to take into account any potential difference in unit costs. The expected cost advantage in providing ULLS could be offset, to at least some extent, by the use of lower-cost fibre to provide some WLR and other services (such as Telstra's retail services).

Additional costs are allocated to WLR and other services from the other cables asset class, including fibre cables. No costs from other cables are allocated to ULLS. On balance, the ACCC has concluded that its adjusted cost allocation factors derived by equalising the unit costs of ducts, pipes and copper cables for ULLS, WLR and other services are likely to be reasonable, given that more detailed information on the structure of costs by service is not available. However, should better cost information be made available, the ACCC will review the cost allocation factors for ULLS, WLR and other services.

71. In this passage, the ACCC acknowledges that the revenue requirement that it has allocated to the ULLS service is likely to be greater than the costs incurred in providing that service. However, the Draft Report does not attempt to quantify the size of this divergence and seems to downplay its importance by identifying a separate issue that the ACCC believes could have a partially offsetting affect. In addition, the ACCC



observes that it does not have any reliable cost information available to it upon which to improve its existing cost allocation methodology. This raises two issues, in our view conceptually separable. We address these below.

5.1. Cost information exists to achieve prices that reflect a correct allocation

72. The issue identified in the quoted paragraphs is the same as the problem that we have identified in this report, but it is interesting to note that the ACCC presents it differently. The ACCC understands the problem as an inability to accurately estimate the size of the revenue requirement to be recovered from existing users of the ULLS service. That is, the ACCC believes that its estimate of the average revenue requirement from ULLS users between 2010-11 and 2013-14 of [cic] could be improved, but that it currently lacks the information to do this. Our view is that it is possible, with the available information, to use the ACCC's calculated average revenue requirement to estimate appropriately cost reflective ULLS prices by band.
73. The next step employed in the Draft Report is to use the existing price relativities from the Pie II model to split the average ULLS cost across bands. The ACCC does this despite stating at the very previous step, summarised above, that it has no basis upon which to allocate costs between bands. It proceeds to calculate individual band prices that are consistent, on an existing demand-weighted basis, with the aggregate revenue requirement that it has allocated to the ULLS service.
74. This methodology would be reasonable if the ACCC had carried out the task that it had earlier set itself, which was to estimate a revenue requirement that related to existing users of the ULLS service. It would then be appropriate to recover this revenue requirement from those users. However, the ACCC acknowledges that it has taken no account of the fact that existing ULLS users are located in areas that are cheaper to serve on average than users for other services. It is therefore inappropriate for the revenue requirement for ULLS to be determined as if this adjustment had been made. That is, it is incorrect for the ULLS revenue requirement calculated by the ACCC to be recovered from existing ULLS customers.
75. The deficiency of the Draft Report's approach is made clear by the existence of an alternative and readily implementable methodology for achieving cost-reflective ULLS band prices using information that is already at the ACCC's disposal. The revenue requirement estimated by the ACCC relating to the ULLS service is calculated under the implied assumption that ULLS is taken in the same proportions across bands as for the total of all services. All that remains is to use the Pie II cost information consistently with this quantity by de-averaging the revenue requirement on an SIO demand-weighted basis, rather than a ULLS demand-weighted basis as applied by the ACCC. The price differences between bands then appropriately embody the cost differences contained by the Pie II model, as set out in more detail elsewhere in this report.
76. We consider that this alternative methodology meets the ACCC's requirement by using reliable cost information to improve on the existing cost allocation methodology.



Further, it has the advantage of very precisely quantifying the effect of the inaccurate allocation made in the Draft Report.

5.2. The offsetting effect of fibre on the cost of other services

77. In the quote reproduced at the beginning of this section, the ACCC acknowledges the potential for inaccuracy in its modelling approach in forming the revenue requirement for ULLS without taking into account that it is predominantly taken in areas that are known to be cheaper to serve than the national average. However, it considers that this effect “*could be offset, at least to some extent*” by the fact that some WLR and internal access services may be provided using fibre, which it considers to be cheaper than copper. Accordingly, the ACCC considers that its allocation of costs between ULLS, WLR and internal access is “*likely to be reasonable*”.
78. To summarise, the ACCC has identified two omissions or inaccuracies in its modelling that are, at best, loosely related in that they both relate to issues of allocation. It has not attempted to quantify or in any way assess the extent to which these inaccuracies might affect its proposed indicative prices. On the basis of *a priori* reasoning which concludes that the inaccuracies had opposite effects in its modelling, it simply asserts that its prices are likely to be reasonable.
79. In our view, the ACCC’s reasoning in this respect is flawed and is highly likely to produce price estimates that are biased, or inaccurate. By not investigating the magnitude of either effect that it considers to be offsetting, the ACCC cannot claim to have produced prices that it knows to be reasonable or accurate in terms of reflecting costs.
80. The conclusions of this report are that, by forming a revenue requirement by reference to an average spread of services for ULLS, instead of reflecting the less costly distribution of where those services are taken, the ACCC has overestimated de-averaged ULLS prices by approximately 70%, as set out in the following section. We consider that the issue raised by the ACCC with respect to the use of fibre in providing WLR and internal access services has an effect that is approximately an order of magnitude less than this.²⁰

²⁰ Fibre may be cheaper than copper, but only moderately so once largely fixed trenching and ducting costs are taken into account. Furthermore, the low proportion of lines that actually use fibre technologies means that it is very unlikely that this modest difference would have a significant effect on allocation at the national level.



6. Revised indicative prices

81. The Draft Report's error is to assume a more costly profile for ULLS customers in forming its revenue requirement for the service than is actually the case. By requiring this amount to be recovered from existing users, de-averaged ULLS prices at each band are significantly overestimated, relative to cost reflective levels. This retards the ACCC's benchmark for allocative efficiency in relation to the ULL service, but may also damage competition at the retail level for broadband and telephony products by raising the costs of access seekers and allowing over recovery of CAN costs generally by the access provider.
82. A potential solution to this error is to correct the allocation of costs entering into the Ovum BBM in order to reflect the less costly profile of ULL services. However, a more easily implementable correction is to amend the final step of the ACCC's methodology, described as step (iv) at section 3 above. At this step, it calculates prices so that proposed price relativities across bands reflect existing Pie II prices, such that the average price weighted by where ULLS services are taken is equal to its calculated unit cost.
83. The required amendment involves continuing to use Pie II price relativities, but instead using SIO weights to equalise the average cost with de-averaged prices.²¹ Because this process uses weights consistent with the original derivation of the Pie II prices and consistent with the ACCC's calculation of the cost pool to be allocated to ULLS users, it produces cost reflective ULLS prices across bands (which are significantly lower than those estimated by the ACCC).
84. This solution will produce cost reflective prices as long as two things hold true:
 - i. the costs allocated to the ULLS using the Ovum BBM represent the total cost of providing copper-based services across all areas; and
 - ii. the relative prices from the Pie II cost model are a reasonable reflection of the relative costs of providing copper-based services in each band.
85. Both of these appear to hold. First, the allocation factors used in the Ovum BBM attempt to isolate the cost of copper assets (eg, from fibre and pair gain assets) and allocate them to the ULLS but these factors do not contain geographic information on where services are located. Second, the description of the Pie II cost model indicates that prices for each band are based on the allocated cost of all copper-based services in each band (moreover the ACCC appear to accept the relative prices from the Pie II cost model are a reasonable tool for de-averaging prices).

²¹ Absolute consistency with the Pie II prices and the calculation of the ACCC's cost pool would require that the de-averaging of ULLS prices be estimated using service weightings on copper SIOs only. We do not have access to these data and use total SIO proportions as a proxy for the purposes of this report



86. There are significant discrepancies between the non-confidential ULLS and WLR reported by the ACCC in its Draft Report and the confidential estimates generated using the Ovum BBM and following the ACCC's further instructions. It is possible to implement corrections to the ACCC's de-averaged ULLS prices without reference to confidential information. These revised ULLS prices are shown at Table 4 below.

Table 4: Amended ACCC prices using SIO-weighted average, non-confidential

	ULLS %	All SIOs %	Pie II prices	ACCC prices	Adjusted prices
Band 1	4.24%	2.61%	\$6.60	\$6.50	\$3.84
Band 2	94.33%	67.33%	\$16.00	\$16.00	\$9.32
Band 3	1.41%	20.12%	\$31.30	\$31.00	\$18.22
Band 4	0.01%	9.93%	\$100.00	\$100.00	\$58.22
ULLS weighted average				\$15.82	\$9.21
SIO weighted average				\$27.11	\$15.82

87. We have also generated estimates that rely on the underlying confidential information derived from the Ovum BBM. These have the advantage of greater accuracy than those relying on the non-confidential numbers, but yield similar results. These prices are shown at Table 5 below.

Table 5: Amended ACCC prices using SIO-weighted average, confidential

	ULLS %	All SIOs %	Pie II prices	ACCC prices	Adjusted prices
Band 1	4.24%	2.61%	\$6.60	cic	cic
Band 2	94.33%	67.33%	\$16.00	cic	cic
Band 3	1.41%	20.12%	\$31.30	cic	cic
Band 4	0.01%	9.93%	\$100.00	cic	cic
ULLS weighted average				cic	cic
SIO weighted average				cic	cic

88. It can clearly be seen from both Table 4 and Table 5 that the error made in the Draft Report have caused the ACCC to overestimate de-averaged ULLS prices in Bands 1, 2 and 3 by approximately 70%, relative to cost-reflective levels.