



**FOXTEL EXPLANATORY MATERIAL IN RELATION
TO STU PRICING**

PART A: STU ACCESS PRICING

**PART B: ACCESS PRICING MODEL FOR DIGITAL
CABLE AND SATELLITE STUS:**

Description of cost based pricing
methodology

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PART A

STU ACCESS CHARGING



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STU Access Pricing

1 Purpose

1. This paper sets out the background to the proposed charging arrangements for STU access.
2. It starts by setting out the evaluative criteria that are relevant to reviewing these arrangements. It then explains the manner in which the proposed arrangements are consistent with these criteria.

2 Evaluative criteria

3. It seems reasonable to suggest that the proposed arrangements should be assessed primarily in terms of three criteria: whether they are compensatory to the access provider, in the sense of being consistent with a reasonable expectation of cost coverage, and hence provide incentives for efficient investment; whether they provide incentives for efficient use of the assets; and whether they are competitively neutral and hence promote competition to the extent to which it is efficient to do so.
4. Arrangements that meet these criteria should be regarded as consistent with the legitimate interests of the access provider, the legitimate interests of access seekers and the community's interests more generally.
5. Taking this as given, the proposed arrangements are reviewed here in terms of these evaluative criteria. It is helpful to structure this review by dealing first, with the determination of the relevant cost pool; and then with the approach adopted in translating that cost pool into access charges.

3 Determination of the relevant cost pool

6. FOXTEL proposes to make a substantial investment in digitalising the service it provides. Undoubtedly, there is commercial uncertainty about this investment, but FOXTEL is willing to pursue it because it believes that, over the longer term, the investment will be commercially justified. In other words, FOXTEL believes that the consumer gains from the investment are sufficient to cover its costs.

7. Access arrangements should at the very least not prevent or preclude this expectation from being met. Were it the case that the access arrangements made ultimate cost recovery impossible or unlikely, they would be inconsistent with a key public policy goal – which is to preserve the incentives for efficient investment, that is, investments that yield benefits to the community in excess of their opportunity costs.
8. Preserving the incentives for efficient investment requires that the access regime not prevent FOXTEL from recovering the costs necessarily incurred for the services it will be providing – in this context, the supply to itself and access seekers of the capacity to offer Pay TV services to end-users by means of digital STUs. If the access regime did prevent FOXTEL from recovering these costs necessarily incurred it would deter investors from committing funds to projects that are expected to yield consumer benefits greater than their costs.
9. The costs necessarily incurred in supplying these services are the costs that would be incurred by an efficient provider in offering these services. In considering these costs, and the manner in which they are calculated in the proposed approach, it is worth paying particular attention to three specific issues. These are: the treatment of now sunk costs incurred in developing the current base of installed STUs; the treatment of the costs that will be incurred going forward; and the calculation of the WACC.

3.1 Acquisition Costs of the Installed Base

10. The installed base that FOXTEL will make available to itself and to access seekers will in part be inherited from the current analogue network. This installed base has been acquired by making substantial, currently unrecovered, outlays in customer acquisition and management. These costs are now sunk. The question is that of whether they should be included in the relevant cost base.
11. From an economic point of view the costs associated with the new service's opening base of installed premises are a **shared** cost between the analogue and digital services. This is because they involve an asset – the opening period installed base – that serves in both the analogue and the digital periods.
12. It is appropriate for these costs, in so far as they have not already been recouped, to be recovered from the digital services.

13. First, securing recovery of these currently unrecovered costs is consistent with economically efficient pricing.
14. In an efficient market, costs that are shared between successive time periods are recovered in line with the time pattern of the income-earning potential they give rise to. More fully, these costs give rise to an asset that in an efficient market, would be depreciated in line with the time pattern of its ability to generate revenues.¹ Any other time path of recovery will reduce the benefit the community derives from the outlays at issue.² Applying this rule in this context means that in an efficient market, the access provider would enter into the digital period with a capital item – the unrecovered outlays on promoting the platform – that would be recouped as the service as a whole, and its income-earning potential, expanded.
15. Such an approach is consistent with commercial common-sense as it amounts to no more than incurring the ‘start up’ expenses involved in attaining a critical mass of users, and then recouping those expenses once the aggregate willingness to pay of the customer base becomes sufficient to do so.
16. Second, payment for these unrecovered expenses is consistent with the expectations that would characterise a properly constructed contestable counterfactual.
17. Given that the analogue network could have expected to recoup those costs over the longer term, even in the absence of digitalisation, the owner of a hypothetical analogue-only network would not have accepted to ‘shut down’, transferring its installed base to the owner of a hypothetical digital-only network for any sum less than the present value of the unrecouped expenses on expanding the platform to its current size.

¹ More generally, to the extent to which revenues in any period fell short of the amount required to recover capital costs, the shortfall would be treated as negative depreciation and recovered from subsequent time periods.

² William J. Baumol (1971) “Optimal Depreciation Policy: Pricing the Products of Durable Assets” 2 Bell J of Economics 638 and Stephen C. Littlechild (1972) “A State Preference Approach to Public Utility Pricing and Investment Under Risk” 3 Bell J of Economics 340.

18. Equivalently, recovery of these expenses is consistent with the bargain that would have been struck in a market in which an intending future provider of digital services could contract, at the outset of the analogue service, with competing intending suppliers of analogue installed bases. The intending future provider of digital services would be contracting, on a competitive tender basis, to acquire (with the actual transfer occurring at the time of digitalisation) the installed bases of the intending suppliers of the analogue service. The least it could pay for those installed bases would be the anticipated resource cost of expanding the platform to that scale, *minus* the anticipated amount efficiently recovered during the analogue period. If it proposed to pay **less** than that, no analogue supplier would be willing to enter into the contract, or at least do so on a scale which maximised the joint gain to the contracting parties. If it initially proposed to pay **more**, then the difference would be competed away in the tender process.
19. The efficient price in this counterfactual would therefore be the unrecovered component of the costs of developing the opening period installed base. It is obvious that this abstracts from the difficulties involved in constructing such a tender process, but these difficulties would almost inevitably lead to a **greater** amount being actually paid. (This reflects the fact that the intending analogue suppliers would likely have some informational advantage in terms of knowledge of the costs of platform promotion, and that informational advantage would allow them a price premium). Using merely the unrecovered costs is therefore conservative relative to a properly constructed contestable counterfactual.
20. Third, not allowing full recovery of these unrecovered amounts would have harmful effects on efficiency.
21. Thus, allowing recovery only of a lesser sum would penalise investors who incurred the cost of developing new markets, as it would amount to expropriation of the asset which those costs had given rise to. As a result, it would deter socially efficient investment and hence be inconsistent with the evaluative criteria set out above.
22. At the same time, allowing recovery only of a lesser sum would induce a distortion to price signals. In particular, it would signal to investors involved in developing new markets that regulatory risks were involved in deferring recoupment of the costs of market development. As a result, the timing of recoupment would be artificially 'front loaded', presumably by setting initial prices at higher levels than would otherwise have been needed. This will induce an allocative efficiency loss as it will reduce take-up, and the growth of the system, below efficient levels.

23. Where network effects are significant, pricing in a way that slows the growth of the system has the potential to impose greater efficiency losses than are usually associated with prices that are 'too high'. This is because the too high pricing does not only lead the marginal consumer to forego some consumer surplus, but also imposes a loss on all network users – as the user base as a whole would have benefited to some extent from the foregone network expansion. There is, in other words, an infra-marginal loss, as well as the more standard marginal loss.
24. Fourth, the proposed approach to recovering these costs is consistent with competitive neutrality.
25. The work previously done for FOXTEL by Price Waterhouse Coopers distinguished between customer acquisition costs that could be attributed to the FOXTEL brand and those that were 'non-brand'. It is only the unrecouped component of the latter that has been treated as forming part of the initial base for the purposes of cost-recovery. In other words, it has been assumed that the unrecouped component of the brand-related expenses will be recovered from FOXTEL's revenues generally, rather than forming part of the cost base of the shared access service (that is, of the access service which benefits both FOXTEL and access seekers).
26. Going forward, it is useful to view this distinction as being between (1) the outlays made to promote the platform, and which hence expand the value available to all providers of service over that platform; and (2) the outlays made to promote a particular offering over that platform, these being likely to mainly or even solely benefit the supplier of the service thus being promoted. The former ought to be recoverable from all users of the platform, while the latter are efficiently recouped by the party engaging the outlay.
27. Given this distinction, there is no sense in which access seekers will be bearing costs that do not provide them with benefits.
28. The fact that the proposed approach allows for smoothing of costs, and in particular of the costs transferred in from the analogue period, also reduces the burden on access seekers. More specifically, in the absence of this smoothing, initial access charges would be very high, imposing a substantial burden on new access seekers. The smoothing approach makes the costs of early entry more bearable.

29. At the same time, smoothing in the manner proposed is economically consistent, as it helps allow cost recovery to be achieved at a rate and to a schedule consistent with overall capacity to pay.
30. In short, while the currently unrecovered outlays on customer acquisition are sunk, their recovery is essential if incentives going forward for efficient pricing and investment are to be preserved. Moreover, so as to fully ensure competitive neutrality, the proposed approach removes from the amount of these outlays that part that reflects expenses specific to the FOXTEL brand. As a result, the proposed approach is consistent with the evaluative criteria set out above.

3.2 Costs going forward

31. In addition to recovery of the sunk outlays referred to above, the proposed approach allows for recovery of the costs to be incurred going forward.
32. As a practical matter, it can be presumed that FOXTEL has no incentive to 'gold plate' the service it provides, or in any other way incur unnecessary costs. FOXTEL has been incurring substantial and continuing losses, and hence has an obvious interest in keeping costs down. Moreover, under the proposed arrangements FOXTEL will remain the major user of the service. Final demand for the service is clearly fairly elastic (otherwise charges would have increased), so that prices inflated by excess costs could cause FOXTEL substantial commercial harm.
33. As a result, access charges that are based on the costs FOXTEL actually incurs will not undermine efficiency or competitive neutrality.

3.3 The WACC

34. In the proposed methodology, the return on capital is calculated as the cost of capital applied to the asset base. The calculation is conventionally made on a nominal, pre-tax basis. This requires that the cost of capital is measured in nominal, pre-tax terms. The cost of capital that is appropriate is the weighted average cost of capital ("**WACC**").
35. Because the process of establishing the STU business is highly risky, there is little opportunity for obtaining debt capital. FOXTEL has been substantially equity funded to date, and that is expected to continue after conversion to digital STUs.

Therefore, the WACC is for an all equity firm and will be equal to the cost of equity capital.

36. For an established business, the cost of equity capital is generally estimated using the Capital Asset Pricing Model (“CAPM”). During the early development stages of FOXTEL, the CAPM was not an appropriate approach to use and estimates of the cost of equity capital to venture capitalists were used instead. As the business transitions to digital, the CAPM is an appropriate approach to use, although it will be necessary to evaluate limitations of the approach and to supplement CAPM estimates. These limitations, and the appropriate means of correcting them, are discussed below.
37. The CAPM is well established in Australia. To use the approach only requires estimation of the parameters of the model. Until a comprehensive study can be made, the parameter values widely accepted in Australian regulation can be used for the market risk premium and the value of dividend imputation credits. The risk free rate is measured as the return on long-term government bonds. The parameter that remains to be estimated is the measure of the variability of equity returns that is systematic to the variability of the market returns. This is commonly referred to as systematic risk or beta.
38. The provision of access to STUs clearly entails significant and ongoing risks. This judgement is reinforced by the experience of FOXTEL with analogue STUs. Furthermore, a substantial component of the risk is systematic. Therefore, the beta to be used in the CAPM will be substantially greater than the average beta for the market as a whole (which by definition is 1). A preliminary assessment is that it will be in the range of 1.6 to 2.0, and it may even be higher.
39. The CAPM is a post-tax model, so an estimate of the cost of equity capital using the model must be adjusted for the effect of tax and the value of dividend imputation credits. A preliminary, purely indicative, current assessment is that the pre-tax cost of equity capital (and WACC since it is assumed there will be no debt capital) is in a range that lies between 18.6% and 21.4%.
40. Given this, the expected return to capital required in a world where the stream of income to the entity was consistent with the underlying assumptions of the CAPM would be in a range that lies between 18.6% and 21.4%.

41. However, reliance on the CAPM alone would understate the appropriate compensation to the access provider, as the CAPM does not compensate for asymmetric risks.
42. The CAPM seeks to calculate a cost of equity that compensates the investor for the risk involved in holding claims on a cash flow within a fully diversified portfolio of such claims. To determine the compensatory return to equity, it generally relies on the assumption that the cash flows being priced are normally distributed.³
43. This assumption is not met in respect of the cash flows being priced in the approach modelled by FOXTEL. This is because the proposed access regime effectively caps the 'upside' FOXTEL can earn, without in any way limiting the downside. In the event of FOXTEL being highly successful in promoting its digital infrastructure, the access arrangements will allow access seekers to secure some, perhaps substantial, part of the corresponding gain. However, if the digital infrastructure were to fail as a commercial venture, only FOXTEL's investors would be exposed to the loss.
44. The fact that the proposed mechanism allows for charges to be set each year on the basis of expected costs, and then adjusted in the light of actual costs, does not alter this fundamental asymmetry. Rather, the adjustment mechanism simply reduces the forecasting risk that would otherwise bear on the recovery of STU costs; in practice, differences between forecasts and out-turns are not expected to have a substantial effect on access charges. Even putting this aside, the fact remains that access seekers could participate in the up-side associated with the venture without being exposed to the risk of loss.
45. As a result, the distribution of the anticipated project cash flows must be asymmetric. An equity investor promised only the CAPM WACC would, in these circumstances, not be indifferent between committing now to digitisation and deferring investment until it was clearer that there was little risk of the downside eventuating.

³ The CAPM may still hold even if this assumption is not met, so long as other, more restrictive assumptions are met. These other assumptions, for example that investors have quadratic utility functions, are not relevant to the case at issue.

46. Analytically, there are a number of methods that could be used to adjust the allowed returns so as to ensure indifference – that is, so as to ensure that a prospective equity investor was adequately compensated for the risk being borne. For example, the **allowed cash flows** could be adjusted by adding to the estimated costs an amount corresponding to the cost of securing enough self-insurance to make the investor indifferent to the asymmetry in the pattern of returns. Alternatively, the **WACC** itself could be marked up by an amount calculated using the Dixit-Pindyck ‘real option’ formula.⁴ Finally, a less rigorous approach, but one which has had some support from regulators, involves selecting a WACC estimate from the upper end of the CAPM range. Regardless of precisely which method is adopted, the result will be to increase the allowed cash flow to the investor.
47. Given the need to recognise asymmetric risk, it is currently proposed to adopt the approach of selecting a WACC estimate from the upper end of the estimated range.

3.4 Conclusions on the cost pool

48. FOXTEL believes that any sensible or acceptable approach to third party access must not prevent the access provider from recovering the costs it necessarily incurs. Additionally, it must determine these costs in a manner consistent with economic efficiency more broadly, as well as with competitive neutrality. The approach to determining the cost pool that FOXTEL proposes is consistent with these criteria.

4 Allocation of responsibility for cost recovery

49. Given the relevant cost pool, the issue then becomes that of allocating responsibility for cost recovery among users of the service.
50. It is broadly accepted that for a scheme of cost-recoupment to be consistent with economic efficiency, each party or group of parties should face responsibility for recovering no less than the costs it causes (the attributable costs). This principle is

⁴ See for example, T. Copeland and V. Antikarov (2001) *Real Options: A Practitioner’s Guide*, Texere.

known as the 'floor test', as it defines a lower bound to access charges. At the same time, in making a contribution to any shared costs, no party should face a requirement to contribute that exceeds the stand-alone costs it would incur in providing the service. The need to ensure that access charges are no greater than stand-alone cost is commonly referred to as the 'ceiling test.'⁵

51. This points to the desirability of distinguishing attributable costs from shared costs. Attributable costs should then be recovered in a manner consistent with the floor test, while contributions to shared costs should be recovered in a manner consistent with the ceiling test.
52. A distinction is therefore made here between two major groups within the cost pool. A first group comprises the costs that are shared between FOXTEL and access seekers. This group accounts for the bulk of costs. The second group comprises the costs that are specifically attributable to access seekers.

4.1 Costs that are shared between FOXTEL and access seekers

53. While the ceiling test sets an upper limit on the allocation of responsibility for coverage of shared costs, it does not specify how that responsibility ought to be allocated within the bounds the ceiling constraint imposes.
54. From an economic point of view, shared costs should be recovered in a way that is minimally distorting of demand. Broadly, this means allocating the burden of shared cost recovery in such a way that at the final allocation, no marginal reallocation of the burden will, on balance, increase demand. This entails imposing a greater burden on those beneficiaries of the shared cost that have the greatest willingness and ability to pay.
55. In a Pay TV environment, the services that benefit from the shared cost are the programmes supplied by FOXTEL and by access seekers. Ideally, each programme

⁵ Floor and ceiling tests need to be modified when there are externalities, either within a network or between them. However, the circumstances which might make such modifications appropriate are not relevant to the case at issue.

should contribute to the fixed costs in proportion to the willingness and ability to pay of final consumers. In practice, it is not possible to measure the price elasticity of demand for the various programmes and to identify the location of their demand curve. However, the revenues each programme obtains ought to be a relatively good proxy for the willingness and ability to pay of its consumers. As a result, allocation of shared costs on the basis of revenues will provide an approximation to the allocation that would be derived on optimal pricing grounds.

56. That said, allocation of responsibility for cost-recovery on the basis of revenues can be distorting. To begin with, it is less efficient than recovering shared costs through truly lump sum charges. Second, it relies on the ability to measure revenues, and may induce parties to disguise the revenues they actually obtain from the service they provide.
57. With respect to the first of these issues, the problem is that any practical system of determining and collecting lump sum charges is likely to be less efficient than the approach FOXTEL proposes. For example, the arrangements for funding Telstra's USO rely on revenues, and hence (even putting their considerable practical difficulties aside) though 'lump sum' in appearance, are not so in their economic substance.⁶
58. Turning to the second issue, there is little doubt that the scope for mis-statement and under-reporting of revenues exists. For example, it may be difficult, if not impossible, to accurately measure and audit the financial benefit the providers of a service obtain from the advertising of their brand through their programmes. In this context, charging solely on the basis of revenues would (1) be biased in favour of suppliers with difficult to measure revenues, and hence would be both be inefficient and not competitively neutral; and (2) skew access seekers' pricing strategies towards the least transparent means of charging, compounding the distortion.

⁶ Lump sum charges are desirable in so far as they either do not distort any marginal decisions or have only minimal impact on marginal decisions. A lump sum charge based on revenue obviously affects the marginal gain to the supplier from expanding its sales, and hence does affect marginal decisions. Such a charge may be lump sum in appearance, but it would not act as a poll tax in practice.

59. In practice, the ability to generate revenues can also be measured by ratings. It is obvious that the correlation is not perfect: a low rating programme may attract a few customers only but from a group with a very high willingness to pay, while a programme with very high ratings may be attracting viewers who each prefer that programme to other options but only by a small margin. However, it is equally clear that there is a link between ratings and a programme's ability to contribute to shared costs, and that ratings are more difficult to 'game' than are revenues.
60. As a result, the proposed approach uses both revenues and ratings as the bases on which to allocate responsibility for coverage of shared costs. By thus spreading the tax basis, it minimises the distortion at the margin of each of the decisions affected – that is, the decision as to whether to provide service, if so, how much to charge consumers through charges that are readily identified (for example, monthly subscriptions), and equally, how far to go in seeking additional viewers and hence greater ratings. As a result, the approach is consistent with the efficiency criteria set out above.
61. At the same time, using both revenues and ratings minimises the risk of distorting outcomes as between different types of service providers. Thus, an approach which focussed solely on revenues would distort competition and market outcomes in favour of suppliers and services best placed to disguise the commercial benefits they derived from service provision; conversely, relying on ratings alone might place a disproportionate burden on those suppliers and services that appeal to wide audiences, while favouring those suppliers and services that attract small audiences with highly inelastic demands.

4.2 Costs incurred specifically so as to accommodate access seekers

62. The cost recovery principles set out above say that when costs are attributable to an individual user or group of users, then that user or group of users should face charges that at least cover those costs.
63. If that user or group of users do not face charges that at least cover those costs, then they are being subsidised. This subsidy will generally distort efficiency by increasing their demand for the service. At the same time, demand for the service by the users or group of users paying the subsidy will be reduced, further distorting outcomes.

64. The attributable costs involved are mainly those involved in allowing for third party access, and include modifications to conditional access systems so as to accommodate third party access. In the absence of third party access seekers, these costs would not be incurred.
65. These costs are small relative to the total costs of the service. They account for three per cent of the NPV of the 2004-2013 cost pool for digital HFC and digital satellite combined.
66. It is proposed to recover these costs on a per-access-seeker basis, that is, simply pro-rating them over the number of access seekers. This has the advantage of simplicity. At the same time, it is unlikely to distort outcomes, given the relatively low level of the charges involved.

5 Conclusions

67. From a conceptual point of view, there are strong arguments for determining the FOXTEL third party access charges on a basis that leaves FOXTEL no worse off than it would be in the absence of third party access. This would tell in favour of an approach that allowed recovery in excess of costs, should exceptionally strong demand eventuate.
68. The fact that FOXTEL is engaging in a risky investment in an area in which it is plainly not a monopolist, and in which it and it alone bears the very considerable risk of loss, makes this case all the more compelling.
69. These considerations notwithstanding, FOXTEL intends, at this stage, to propose an approach that is based on mere cost recovery. Additionally, a conservative approach has been adopted in defining the relevant cost pool and in the allocation among the parties of responsibility for recovery of that cost pool.
70. The approach adopted to these issues is consistent with providing incentives for efficient investment and efficient use of the assets and is competitively neutral. As a result, it should meet the concerns of public policy in this area.

PART B

Access Pricing Model for Digital Cable and Satellite STUs:

Description of cost-based pricing methodology



August 30, 2002

1 Introduction

The methodology used to calculate the access prices for the digital cable and satellite STU access service is a cost-of-service building block approach, which allows full recovery of the costs necessarily incurred in providing the STU services. In a number of instances a conservative approach has been adopted (ie, costs have been understated), in order to arrive at an access price that is attractive for FOXTEL's competitors. The key assumptions that lead to the conservative access price estimates are identified in section 2.

Estimating cost-based access prices for the STU services involves two distinct steps. The first is the estimation of the annual cost pools, which is described in section 3 along with cost estimates, which are provided for indicative purposes only. The second is the translation of these cost pools into access prices, the methodology for which is discussed in section 4.

It is important to stress that the estimates presented here are strictly illustrative. In the approach as proposed, the amounts at issue would be calculated at the start of each year and then revised on the basis of actual outlays during the period. Given this, it is not intended that forecast estimates would be generated or relied on. However, 3 years of estimates are included here so as to help in the understanding of the proposed methodology.

2 Conservative assumptions

There are a number of assumptions made in the estimation of STU access prices that are considered conservative and hence understate the full cost of providing the STU services.

First, FOXTEL has incurred substantial costs in the set-up and operation of its analogue PayTV business since 1996. A considerable proportion of these costs remain unrecovered. In the absence of digitisation, FOXTEL would aim to recoup these costs from its future analogue PayTV revenues. Hence, in order for FOXTEL to be willing to 'shut-down' its analogue network and transfer its customer base to the digital network, it should be permitted to recover these costs from its future digital PayTV revenues. The unrecovered amount that should be transferred from the analogue to the digital business is analogous to the minimum amount that the owner of a hypothetical analogue-only network would have accepted to shut down and transfer its customer base to the hypothetical digital network.

In principle, the full unrecovered amount from the analogue business should be transferred to the digital business. The full IBAC is estimated to exceed \$858 million.

However, in order to make the cable service attractive for access seekers, a very conservative approach has been adopted to estimate the level of unrecovered analogue installed base costs to be transferred to the digital STU business. The approach used to estimate these installed base acquisition costs is described in section 3.1 below. The resulting level of unrecovered analogue installed base costs is presented in Table 1 below. As can be seen from a comparison of the level of unrecovered costs, the conservative estimate results in only around one-third of the total unrecovered analogue installed base costs being transferred to the digital business.

Table 1: Conservative estimate of unrecovered analogue installed base costs

	2004	2005	2006	2007
Conservative estimate of unrecovered analogue installed base costs (\$ million)	271	6	2	0

Second, the estimation of cost pools for the digital STU services is conservative because the CAPM is used to calculate the WACC, which does not compensate the access provider for asymmetric risk.

Third, the estimated annual costs in the early years of the digital business operation are lowered as a result of the smoothing approach that has been applied to installed base acquisition costs. This approach defers the recovery of substantial costs to future years, when take-up of the service increases. This is done to ensure that costs are recovered in line with the value derived from digital pay TV services over time.

3 Estimation of the annual cost pools

The annual cost pool is comprised of annual capital costs and operations expenses. Each of these cost pools is further subdivided into attributable costs and shared costs. Attributable costs are costs that are incurred as a result of the provision of access to third parties. Shared costs are costs that are shared between access seekers and FOXTEL.

3.1 Capital costs

Costs are treated as capital items if they involve lumpy expenditure that is recovered over the asset's life, the average subscriber duration or the project life. For example, STU equipment costs are costs that are incurred on a once-off basis for each unit and are recovered over the 5-year useful life of the asset.

All capital costs included in the model with the exception of installed base acquisition costs are costs that are estimated to be incurred in the provision of the digital cable and satellite STU services. The capital attributable costs items are the:

- Active customer smartcard database
- Integration and incremental costs

The capital shared costs that are not part of installed base acquisition costs comprise the following items:

- Smart cards
- SI generator
- Net installation call costs
- Analogue to digital migration
- Marketing - acquisition
- Conditional access system
- Digital STUs

Installed base acquisition costs are costs associated with the development of the pay TV subscriber base that were not recovered or will not to be recovered prior to the closing of the analogue network. These costs would be expected to be recovered over the longer-term of the analogue network and represent the minimum amount that a digital pay TV business would need to pay the analogue business to purchase the installed STU base to make the analogue network business willing to cease operations.

For cable STUs these installed base acquisition costs are calculated by taking the cost items from the analogue model developed by PWC associated with the development of the pay TV installed base. These costs comprise:

- Engineering
- Installation (Less Installation revenue)
- MDU backboning
- Disconnections
- Service calls (Net)
- Generic platform marketing
- Sales
- Other Common Costs

Generic platform marketing costs are calculated as 68% of total marketing costs allocated to cable STUs. The 68% is based on the assumption used in the PWC analogue model. Common costs comprise the proportion of corporate overheads and non-STU depreciation allocated to STUs. The allocation between content and STUs is based on the relative proportions of direct costs.

The revenues that FOXTEL secured toward these costs are then deducted to arrive at unrecovered installed base acquisition costs to be included in the digital STU model. To determine the level of revenue deducted, the PWC model is used. This model allocates FOXTEL's actual cable revenues between content and STUs based on the proportions of costs (including common costs) allocated to content and STUs. Revenues are pro-rated between costs associated with the development of the installed base and other STU costs on the basis of costs.

For satellite STUs, total unrecovered costs up to the commencement of the digital network are transferred. These total unrecovered costs are sourced directly from FOXTEL's accounts and comprise the following items:

- Satellite STUs
- Smart Card Costs

- Logistics Department
- Installation
- Engineering
- MDU Backboning / Conversion Costs
- Service Calls & Other Activities
- Sales & marketing allocated to STUs
- Foreign Exchange and Parts
- Other common costs

The estimated capital expenditure for the first three years of operation, categorised into attributable and shared costs, is listed below in Table 3 for digital cable and satellite STUs.

Table 3: Digital STU capital costs, \$million

	Cable STUs			Satellite STUs		
	2004	2005	2006	2004	2005	2006
Attributable capital costs*	2	0	0	2	0	0
Installed base access costs	271	6	2	115	0	0
Other shared capital costs	112	161	139	78	123	111
Total shared capital costs	383	167	140	193	123	111

Capital costs are then annualised (ie, the pattern of recovery of the capital costs over time is determined) by calculating depreciation and the opportunity cost of capital. Depreciation is calculated using the straight-line methodology, which simply allocates an equal proportion of the cost of the asset to each year of the asset's life. The opportunity cost of capital is

calculated by applying the WACC to the written down value of the asset base. The WACC used in this model is a pre-tax nominal WACC of 20.0% for both cable and satellite STUs.

It is assumed that capital expenditure occurs evenly over the year rather than all at the beginning of the year, as this is likely to best match the actual pattern of capital expenditure. Therefore, only half of the depreciation costs for assets purchased in any given year are included in that year, with the other half recovered in the following year. Similarly, the WACC is applied to the value of the asset base mid-way through the year, rather than at the beginning of the year. The asset base mid-way through the year is calculated as the opening balance at the beginning of the year plus the closing balance at the end of the year divided by 2.

3.2 Operations costs

All costs that are recovered in the year that the expenditure is made are treated as operations costs and are simply expensed in the year that they are incurred. A mark-up is applied to operations costs to reflect a contribution to corporate overhead costs. This overhead, of 10.89%, is based on the average percentage overhead derived from the PWC model for analogue STUs over the period 1996 to 2002.⁷ The estimated operations costs associated with digital cable and satellite STUs are presented in the Table 4 below.

Table 4: Digital STU operations costs, \$million

	Cable STUs			Satellite STUs		
	2004	2005	2006	2004	2005	2006
Attributable costs	0.1	0.1	0.1	0.1	0.1	0.1

⁷ It is noted that this may well understate the overhead costs due to the conservative approach taken to allocating overhead costs in the PWC model and potentially also due to differences between the cost structures of the digital and analogue businesses.

	Cable STUs			Satellite STUs		
	2004	2005	2006	2004	2005	2006
Shared costs	9	22	32	36	46	50

3.3 Smoothing of installed base acquisition costs

The sum of annual capital costs and operations and maintenance costs gives the total annual costs per year. These total annual costs are presented in Table 5 below for both digital cable STUs and satellite STUs.

Table 5: Unsmoothed annual shared costs

	2004	2005	2006
Digital cable STUs (\$million)	70	172	231
Satellite STUs (\$million)	109	163	200

This approach results in a large cost being allocated to subscribers in the first year of operation relative to other years for digital cable STUs. Prices that are based on these “unsmoothed” costs could result in inefficient distortions in terms of the timing that access seekers choose to take-up the service. Such charges may encourage access seekers to delay the take-up of the service to later years when the charges decline.

In order to smooth costs over time and to ensure that costs are recovered in line with the value derived from digital pay TV services over time, the installed base acquisition costs are smoothed over the 10-year project life. The approach used to smooth installed base acquisition costs is to allocate costs to each of the 10 years in line with the take-up of digital PayTV services over time. This allocation is performed in a manner that ensures that in NPV terms the installed base acquisition costs recovered equate with the NPV of the annual installed base acquisition costs. The results of this smoothing are presented in Table 6 below.

Table 6: Smoothed annual shared costs

	2004	2005	2006
Digital cable (\$m)	41	132	223
Average in-home digital cable STUs	109k	395k	698k
Satellite (\$m)	110	152	194
Average in-home satellite STUs	463k	557k	651k

The smoothed total annual costs are then used to determine access prices.

4 Translation of costs into prices

This section sets out the proposed methodology for recovering both shared costs and attributable costs. The methodology has been arrived at through detailed analysis of a range of pricing options. The selection of the proposed approach has included consideration of:

- practical implementation - for example, the potential for access seekers to avoid access prices by hiding their revenue in some way; and
- economic efficiency principles – including whether the cost faced by individual access seekers is aligned with the benefits that they derive from the access service.

In order to more fully understand the practical impact of the methodology, numerical examples of the potential prices that could be faced by access seekers are presented. Again, it is important to stress that these estimates presented are purely illustrative.

4.1 Shared costs

4.1.1 Methodology

The underlying premise of the proposed pricing approach is that costs are recovered in line with the benefits that are secured from the provision of the service. The approach includes a

component that is based on the access seeker's subscriber revenue. However, it also includes a mechanism to ensure that access seekers who receive benefits from access in a form other than subscription revenues face a non-zero access price. The absence of such a mechanism would result in inefficient over-use of the access service. In addition, the absence of this mechanism would increase the incentives for access seekers to (perhaps inefficiently) hide their revenues – for example, either through deriving revenues from indirect means (such as advertising) or by bundling their channels with other products or services.

More specifically, this pricing methodology bases an access seeker's charge on the maximum of its actual subscription revenue and its "imputed revenue". The imputed revenue is based on the access seeker's ratings and involves the imputation of a revenue amount to each rating percentage point. The imputed revenue amount per rating percentage point is based on FOXTEL's revenues and ratings. Consequently, the access seeker's imputed revenue would be calculated according to the following formula.

$$\text{Imputed revenue} = (\text{access seeker's share of viewing}) \times (\text{FOXTEL total subscription revenue}) / (\text{FOXTEL share of viewing})$$

4.1.2 Notes on the use of ratings

An issue of practical implementation that has been identified is that small channels may have ratings that are statistically insignificant. This problem will be dealt with by using a minimum rating, set at the minimum level of statistical significance.

A second issue associated with the use of ratings is that the data must be purchased from the research company that conducts the surveys (currently AC Nielsen). The cost of this data is approximately \$8,000 per channel per month. As a condition of access, access seekers must purchase the ratings data for each of their channels.

A third issue is that the ratings share excludes open broadcasters' ratings, ie imputed revenue is based only on share of subscription TV ratings.

4.2 Attributable costs

Methodology

Attributable costs are allocated equally across all access seekers. In other words, the charge levied will be the same for all access seekers independent of the number of channels used, revenue share or ratings.