

Pricing of Capital Contributions to Electricity Networks

Discussion Paper

**INDEPENDENT PRICING AND REGULATORY TRIBUNAL
OF NEW SOUTH WALES**

Pricing of Capital Contributions to Electricity Networks

Discussion Paper

Submissions

Public involvement is an important element of the Tribunal's processes. The Tribunal therefore invites interested parties to make submissions to all its investigations.

Submissions should refer to specific issues that have been raised in relevant issues papers and interim reports. There is no standard format for the preparation of submissions. Submissions must be typed. If they exceed 15 pages in length, they must also be provided on computer disk in word processor, PDF or spreadsheet format.

Confidentiality

Special reference must be made to any issues for which confidential treatment is sought and all confidential parts of submissions must be clearly marked. *However, it is important to note that confidentiality cannot be guaranteed as the Freedom of Information Act and section 22A of the Independent Pricing and Regulatory Tribunal Act provide measures for possible public access to certain documents.*

Public access to submissions

All submissions that are not deemed confidential are available for public inspection at the Tribunal's offices immediately after registration by the Tribunal. They are also available via the Tribunal's website. Transcriptions of public hearings are also available.

Public information about the Tribunal's activities

Information about the role and current activities of the Tribunal, including copies of latest reports and submissions is available on the Tribunal's website at www.ipart.nsw.gov.au.

Submissions on the issues raised in this paper should be received no later than 1 May 2000.

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1 INTRODUCTION

The manner of paying for the network costs of new or expanded customer connections to the electricity distribution system has been under discussion for some time.¹ Distributors and customers have raised concerns about the practicality and incentive effects of the current arrangements. At present, customers must make capital contributions for some network costs, while other related costs are recovered through use of system charges.

The way the balance is struck between customer contributions and network tariffs has important implications. Where a customer is not close to an existing network, or the network is already fully used and new capacity is required, the cost of extending the network may be high. If a customer is required to pay all or part of the capital cost, this may act as a significant barrier to connection. Alternatively, if a large proportion of the costs are recovered through prices rather than through a capital contribution, the connecting customer may receive a substantial benefit at the expense of other customers on the system. Masking these costs may lead to inefficient network investments.

In 1998 the Tribunal established an electricity industry consultation group (EICG), comprising representatives of the distribution network service providers, the retailers, large customers, and consumer and community groups.

The EICG formed a working group to investigate customer and industry concerns regarding the effect of the current capital contributions framework. After examining the relevant issues, the working group developed a set of recommendations for the Tribunal's consideration. The working group completed its initial report in April 1999.² Further examination of implementation issues resulted in a second submission³ that establishes guidelines for implementing the working group's recommendations.

The working group's submissions propose significant changes to the current arrangements for determining capital contributions. The proposal has potentially important implications for new or expanding customers, particularly those located in sparsely populated areas. Copies of these documents are available for inspection at the Tribunal's offices or on the Tribunal's website at www.ipart.gov.au.

This paper summarises key features of the current framework and the framework proposed by the working group. It also presents alternative options.⁴ The Tribunal hopes the paper will stimulate discussion, and provide useful feedback on the most appropriate capital contributions framework for NSW.

¹ See Chapter 11 of the Tribunal's report to the Premier, *Pricing for Electricity Networks and Retail Supply*, July 1999.

² *Report from the Capital Contributions Working Group to the Electricity Industry Consultation Group*, April 1999

³ Submission to the Electricity Industry Consultation Group, *Guidelines for Implementing the Recommendations of the Capital Contributions Working Group Final Report*, March 2000.

⁴ However, for a fuller understanding of the background and issues readers are referred to the EICG Capital Contributions Working Group reports. These are available on the Tribunal's website at www.ipart.nsw.gov.au

1.1 Background

The National Electricity Code provides a framework for the national wholesale electricity market. The Tribunal is the jurisdictional regulator for distribution service pricing in New South Wales.

The current capital contributions framework in NSW is detailed in the Tribunal's Determination 10 of 1996 *Pricing for Capital Contributions and Recoverable Works*.⁵ The relevant parts of the determination will end on 30 June 2000. The Tribunal intends to issue a new determination on capital contributions, which will come into effect 1 July 2000.

1.2 The review process

The Tribunal wishes to learn the views of interested parties before considering any major changes to the current arrangements. Submissions should be sent to the address below, or faxed to (02) 9290 2061 by 1 May 2000.

Capital Contributions Policy Review
Independent Regulatory and Pricing Tribunal
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The Tribunal can be contacted by email at ipart@ipart.nsw.gov.au.

2 CURRENT ARRANGEMENTS

A number of key features characterise the current capital contributions framework for NSW.

- Distributors are responsible for funding all shared parts of the network upstream from the point of customer connection.⁶ An addition to the existing shared system is commonly referred to as an 'augmentation'. The point of customer connection is defined as the nearest point on the network capable of supporting that customer's load.
- Customers are responsible for the cost of all non-shared assets required for their connection downstream from the point of connection. If it is known or expected that some assets are to be shared with other unrelated customers, the distributor becomes responsible for the cost of those assets. There is no scheme for reimbursing customers for assets they have funded if they are subsequently shared.
- If a customer elects to proceed with a connection where economically and environmentally superior options to connection exist⁷, that customer is responsible for

⁵ As varied in Determination 5.4, 1997.

⁶ Customers may be required to fund augmentation where three conditions are met to the Tribunal's satisfaction:

- the costs are specific to an individual customer
- the costs are large in relation to the overall capital works program of the distributor
- the project can be shown to be persistently uneconomic.

There have been no cases of distributors using this option.

⁷ Such as small scale, stand alone generation.

the full cost of connection, including any augmentation costs upstream from the point of connection.

- Customers have the option of either retaining ownership of assets they have funded, or handing them over to the distributor. Significant legal obligations may be associated with retaining ownership.

Under s15 of the *Electricity Supply Act 1995*, distributors are obliged to supply an electricity connection on receiving an application from a customer. The Act does not specify either the means of connection, or the method of cost recovery.

3 KEY ISSUES

Decisions on the appropriate level and location of network investment are central to the development of an efficient and effective electricity system. The demand from customers for new or expanded connection drives a significant part of network investment. The network prices customers face in receiving these services, therefore, play an important role in determining how the network develops.

In effect, capital contributions are a form of network price, which is paid up front rather than over time. In common with other network prices, they have implications for economic efficiency, equity and administrative simplicity. The working group has raised issues with the current arrangements under each of these criteria.

3.1 Efficiency

Electricity distributors have expressed concern that current restrictions on their ability to require contributions for certain extension and augmentation costs could promote 'uneconomic' connection, particularly in less densely populated areas. They argue that in some circumstances the costs of connecting these customers are not recovered from existing average tariffs over the life of the assets. Furthermore, if the costs of connection are hidden from the customer, cost effective alternatives to connection at that location may not be considered.

3.2 Equity

Where customers pay for connection assets that are later shared with other customers, no mechanism exists within the current arrangements for equitable sharing of the original cost. The first customers to arrange connection may be disadvantaged. Distributors may be reluctant to acknowledge the possibility that additional requests for connection may emerge later, as under the current arrangements this changes the status of the assets from 'dedicated' to 'shared'. This shifts the responsibility for funding the connection to the distributor.

'Uneconomic' connections and augmentations place upward pressure on average prices. This is because the costs incurred exceed net income derived from the asset over its life. Existing customers may effectively subsidise new customers. In other cases the situation may be reversed, and the revenue from new connections may exceed the costs over the life of the assets. The net effect on average prices will depend on the balance of economic and uneconomic connections.

3.3 Simplicity

Both distributors and customers report difficulties in interpreting and applying the current guidelines. In particular, the definition of a connection point, the distinction between shared and dedicated lines, and the assessment of alternatives to connection involve a degree of subjectivity. From some customers' perspectives, the size of the financial liability in question may rule out connection as a realistic option. The impacts could be significant. Where it is difficult to apply the current guidelines, the scope for disputation has increased.

The present guidelines apply uniformly across NSW. Connection related costs tend to be greatest where the network is less robust because customer densities are low, as occurs on urban fringes and in rural areas. In some areas of the state, rural land has been subdivided extensively, but not yet developed. The affected distributors are concerned that some customers may demand high cost connections. This is not a universal issue. However, it raises the question of whether significant regional issues are best addressed on a regional, rather than a state wide basis.

4 WORKING GROUP PROPOSAL

The proposal developed by the working group aims to provide a unified approach to allocating the network costs of new or upgraded customer connections. It aims to:

1. Recognise that existing network tariffs already include a contribution to connection costs. Called the 'revenue offset' or 'distributor contribution', this contribution is collected by distributors in the form of net revenues received from network charges over the life of the assets. It is the notional amount contributed to the costs of providing shared network assets through the payment of network tariffs over the life of those assets.
2. Expand the customer's responsibility for additional network costs, including shared extension work and in some cases the augmentation of existing network capacity. The customer's capital contribution is then calculated by an 'economic test' which compares the cost of augmentation and extension with the notional amount contributed through network tariffs, the 'revenue offset'.
3. Introduce a reimbursement scheme that provides an opportunity to reimburse customers who have funded assets that are later shared.

4.1 Distributor contribution (revenue offset)

The distributor contribution, or 'revenue offset', is based on the proposition that existing network tariffs already include some allowance for the cost of additions to network capacity. By identifying the contribution from tariffs, and deducting this from the network costs of connection attributed to the customer, a closer matching of costs and benefits can be achieved.

The working group proposes that for each customer tariff category, the distributor contribution be calculated as the present value of:

- revenues
- less operating costs

- less a contribution to appropriate upstream assets⁸ taken over the average asset life.

The working group assumes that current average costs approximate long run marginal costs. Hence, the working group proposes using total average operating costs including an overhead allocation. Future values are discounted at the regulated cost of capital, ie the weighted average cost of capital (WACC) determined by the Tribunal.

The comparison of connection costs with the distributor contribution is called the 'economic test'. It tests whether the up front costs attributed to connection are covered by the present value of the expected future net revenue stream. If the connection fails this test, and is deemed to be 'uneconomic', the proposal requires the customer to cover the gap.

For practical reasons, the working group proposes that important limits are placed on the application of this test. These limits relate to the nature of the connection (eg size and location) and the distance that network costs are tracked upstream within the system.

A 'dominant load' test is used to identify loads that may trigger significant network investment. Arguing that the dominant load will vary, depending on network density, the working group has proposed separate definitions for urban and rural areas:

- in *urban* areas a dominant load is when the customer's electricity supply requirement exceeds 50 per cent of the capacity of the distribution substation and/or the rated capacity of the associated high or low voltage conductor or cable, from which supply would normally be sourced
- in rural areas a dominant load is supply in excess of 100 Amperes (or 25 kVA) single phase, or 32 Amperes (or 25 kVA) three phase.

4.2 Augmentation

To determine whether a capital contribution is required, the working group proposes that the economic test be applied to the cost of all work on the shared network attributed to a customer connection. Under the working group's proposal, the application of the economic test is subject to major limitations. They are:

- In *urban* areas, for connections under the dominant load, customers would be responsible for service lines, consumer mains and dedicated low voltage extension assets. No economic test would apply to these assets. Reflecting the density of the urban network and the resulting complexity of cost allocation and reimbursement, the working group has proposed a simplified approach in which distributors contribute all high voltage extension assets and sub-transformation equipment without the economic test being applied. The working group believes this equates with current practices in urban areas. However, the distributors wish to reserve the discretion to apply the economic test to these assets in certain cases, such as with high rise developments.
- In *rural* areas, for connections below the dominant load, customers would be responsible for service lines and consumer mains. The economic test would be applied to other extension assets required. However, augmentation of the upstream network would be provided by the distributor and not included in the economic test.

⁸ Only necessary where customer contributions to augmentation costs are less than the total augmentation cost.

- In both *urban* and *rural* areas, the economic test will be applied to all connection costs for connections above the dominant load, including augmentation of the existing network up to the next voltage transformation point where a substation is involved.
- For a *high voltage* customer, the cut-off point would be determined by whether work is required on the sub-transmission network, the nearest zone substation (including the transformer), or the primary (high voltage) distribution network.
- For a *low voltage* customer, the cut-off point would be the high voltage distribution network and the nearest distribution substation, including the transformer.

Distributors wish to reserve the right to go beyond these points in exceptional cases.

4.3 Reimbursement

Where other customers later use assets that have already been paid for by a customer, it is proposed that the original customer be reimbursed by the later customer/s, or by the distributor, depending on the economic test. The amount of the refund would be based on the *pro rata* utilisation of the assets and their value at the time of construction, capped at the amount of the original contribution. Whether the refund is paid for by the later customers or the distributor would depend on the outcome of the economic test applied to the later connections.

Refunds would be available for a period of six years from the in service date of the assets.⁹ No refunds are proposed where the amount due is less than \$200.

5 DISCUSSION

In its June 1999 report to the Premier, the Tribunal states that the Capital Contributions Working Group:

... has made valuable progress in identifying issues of concern to distributors and customers. Relating these issues to the broader context of system-wide customer contribution levels and the economic and social responsibilities of the distributors has been particularly useful.¹⁰

Further proposals contained in the working group's submission make a further significant contribution to the debate. The Tribunal commends the members involved for the level of documentation provided and the amount of work that has obviously been undertaken.

The following comments are provided to assist interest parties in considering the issues raised. They are grouped under four general headings: price signals, allocation of network costs, methodology for calculation, and regional differences.

⁹ This limit is set by the *Electricity Supply Act* and cannot be varied without legislative amendment.

¹⁰ IPART, *Pricing for Electricity Networks and Retail Supply*, Volume II, p 139.

5.1 Price signals

An argument in favour of customer contributions is that they provide better locational price signals. It is desirable to provide more effective price signals to guide network investment. However, upfront capital contributions are not necessarily the most effective form of price signal. In particular, increased capital contributions may result in network investments that would have proved worthwhile for the distributor failing to proceed, for a number of reasons:

- the customer may underestimate the value of the connection, relative to its upfront capital cost due to:
 - poor information on the future costs and benefits of the connection
 - the risk of under-recovering the capital cost if the land is later sold
- the connection costs attributed to the customer may be overestimated. Overestimation may occur due to:
 - the absence of competitive or regulatory pressure on construction costs
 - the misallocation of shared costs across beneficiaries of the investment
- customers may face barriers in gaining access to the competitively priced funds required to cover the capital cost.

As an alternative, network charges could be used to provide improved locational price signals. In some circumstances, cost information provided through network charges may prove to be more effective in achieving an efficient allocation of network investment. Where locational signals are currently weak, distributors may have the option of restructuring existing charges to make them more cost reflective. The scope for restructuring existing charges is subject to side constraints. Where these are binding, distributors could establish appropriate new network charges to apply to newly connected customers.

Apart from restructuring posted network charges, considerable scope exists for negotiation on access charges. The ability to negotiate can result in outcomes that benefit both distributors and customers.

However, if a decision is taken to move to significantly increased reliance upon upfront funding for locational signals, this may weaken the incentive for distributors to develop more efficient network price structures.

5.2 Allocation of network costs

By their nature, electricity networks involve shared assets and relatively high proportions of common costs, particularly on a regional level. One way that network service providers increase economic efficiency is by reducing the contractual costs and the risks that customers would face if they sought to independently arrange their own supply.

The coverage of capital contributions can be extended upstream to include significant elements of network augmentation. However, this necessitates a commensurate ability to unbundle network services in order to allocate costs to future beneficiaries. Converting those costs into upfront capital charges makes no allowance for errors in allocation. Nor does it allow for changes in circumstances that may alter the pattern of benefits as the network develops.

If customers are required to fund shared assets, including any excess capacity that may be added at the time of augmentation, network service providers will have to implement a reimbursement scheme, or calculate each customer's contribution on use of the assets. Both approaches are complex to apply. Under the reimbursement scheme initial customers bear the risk of future take-up of spare capacity. If each customer's contribution is calculated in accordance with asset use, distributors bear the risk of future take-up of spare capacity.

5.3 Methodology for calculation

Regulators and distributors around Australia are paying increasing attention to the concept of using a net present value calculation to establish a distributor contribution towards connection costs.¹¹

To apply the economic test, a standard calculation methodology is required that is acceptable to stakeholders and low cost to implement. One way of reducing cost and complexity¹² is to create posted revenue offsets (distributor contributions) for broad tariff categories. These could be subject to oversight by the Tribunal.

The calculation of the offset is sensitive to cost assumptions. Lower costs result in a larger offset. In principle, the economic test should compare revenue with incremental costs. The proposal assumes that in the NSW system marginal costs are equal to average costs. The assumption was made for practical purposes, but may result in higher cost estimates than if an incremental cost measure was used.

A methodology is also required to calculate refunds between customers. Assets subject to customer contributions must be tracked for six years. Later customers will require reasonable prior notification of their liability, and distributors will require the procedures and authority to ensure that payment of any refund is made.

5.4 Regional differences

The current guidelines apply a uniform approach across the state. This is consistent with the Tribunal's preference for regulatory measures that are simple and transparent. However, the physical and economic character of electricity networks, and the demand for connection display significant locational variation.

Some of the difficulties reported in applying the current guidelines appear to stem from specific local or regional factors. NorthPower, for example, has drawn attention to the potential demand for high cost 'uneconomic' connections in its area due to the large number of undeveloped rural lots.

The working group's proposal to differentiate between urban and rural areas in the application and coverage of the economic test is one way of responding to the variations in circumstances. The proposal also recommends that, again depending on circumstances, distributors should have the discretion to vary the application of the economic test within urban areas.¹³

¹¹ See **Attachment 1** for a summary of current State policies.

¹² Or a distribution use of service (DUOS) charge-related formula (or similar), as applies in South Australia.

¹³ Submission to the Electricity Industry Consultation Group, *Guidelines for Implementing the Recommendations of the Capital Contributions Working Group Final Report*, March 2000, p 14.

Under the current framework, there is scope for over-recovery of urban connection costs and under-recovery of rural connection costs. The effect of the economic test, in principle, would be to reduce regional differences in the level of cost recovery. Proposed limitations on the use of the economic test may have the effect of continuing the incidence of over-recovery from some urban customers. The limitations may be particularly relevant to parties with interests in underground residential developments and high rise multi-tenant properties.

Attachment 2 provides summary information on possible impacts of the proposal.

Preliminary distributor estimates of revenue offsets for broad customer categories show that large variations may be expected between urban and rural areas. While these estimates have not been validated, they indicate that rural customers could face a revenue offset (distributor contribution) valued at around 15-20 per cent of the amount allowed a comparable urban customer.

This is in contrast with the South Australian approach, which applies a simple distribution use of system (DUOS) charge-related formula uniformly to calculate the revenue offset.¹⁴

6 NEXT STEPS

The Tribunal wishes to gain the views of interested parties before considering any changes to the current guidelines. Following the receipt of submissions, the Tribunal will host a round table discussion¹⁵ with customer and industry representatives. Thereafter, the Tribunal will consider specific proposals and hopes to arrive at a decision by early June.

6.1 Options

Based on the issues raised and proposals received, four options have been developed to help focus discussion.

Option 1 Continuation of the current guidelines.

Option 2 The proposals of the Capital Contributions Working Group.

Option 3 Continuation of the current guidelines, modified to:

- tighten the key definitions
- require customers to contribute to shared extension assets
- introduce a reimbursement scheme for shared extension assets.

This option would not include customer liability for upstream augmentation or revenue offset elements of the CCWG proposal.

Option 4 The proposals of the CCWG modified to:

- adopt a simplified economic test based on fixed revenue offsets
- exclude customer liability for upstream augmentation assets (ie, limit capital contributions to dedicated assets and extension assets).

¹⁴ For customers consuming more than 30 MWh of electricity a year, the formula is $\$1,200 + 3 \times \text{annual DUOS charges}$. For smaller customers a fixed amount of \$3000 applies.

¹⁵ The round table discussion will be held 9 May 2000.

Table 6.1 summarises the main elements of each option.

Table 6.1 Main elements of options

	<i>Distributor contribution (revenue offset)</i>	<i>Obligation to fund:</i>				<i>Reimbursement scheme</i>
		<i>Connection</i>	<i>Dedicated extension</i>	<i>Shared extension</i>	<i>Upstream augmentation</i>	
<i>Option 1</i>	No	Customer	Customer	Distributor	Distributor	No
<i>Option 2</i>	Yes – individual customer/ tariff class calculation	Customer	Customer <i>less</i> distributor contribution	Customer <i>less</i> distributor contribution	Customer <i>less</i> distributor contribution	Yes
<i>Option 3</i>	No	Customer	Customer	Customer	Distributor	Yes
<i>Option 4</i>	Yes – fixed amounts	Customer	Customer <i>less</i> distributor contribution	Customer <i>less</i> distributor contribution	Distributor	Yes

Based on a preliminary assessment of these elements, the main implications of the options may be summarised as follows.

Option 1

- Distributors fund shared extensions. If these extensions are not economic, the cost may be reflected in higher average network charges.
- Distributors fund upstream augmentations of the network. If these augmentations are not economic, the cost may be reflected in higher network charges.
- Customers are not required to fund assets beyond the connection point, unless the assets are dedicated to that customer. Customers and distributors have experienced problems with the current guidelines due to uncertainty regarding definitions.
- Distributors in rural areas may face a large potential demand for uneconomic shared extensions.
- There is no reimbursement scheme. This creates an incentive to game the timing of connection (for example, by waiting for a neighbour to connect).
- The absence of an economic test may mean that some customers over-contribute toward the cost of connection, and other customers under-contribute. Distributors would have an incentive to introduce more cost reflective use of system charges.

Option 2¹⁶

- Some customers would make much larger contributions than at present. Customers seeking uneconomic shared extensions would pay the difference between the cost of connection and the present value of net revenues accruing to the distributor over the life of the asset (assumed to be 30 years).
- Other customers, mainly in urban areas, would benefit from a reduction in their contribution when the economic test is applied. Limitations on the use of the economic test would affect the pattern of benefits.
- Customers that are classified as dominant load would be required to fund upstream augmentations of the network. Some customers could be required to make very large capital contributions.
- Overall, distributors would probably pay an increased share of connection costs relative to under Option 1. However, the risk of having to pay for large numbers of expensive, uneconomic shared extensions in rural areas would be reduced.
- The reimbursement scheme would provide equity for customers who pay for assets that are utilised by later connecting customers, but would have administrative costs.

Option 3

- Lessen the potential for disputes between customers and distributors by modifying key definitions. (For example, by adopting a more technical definition of a connection point.)
- Customers would pay pro rata for shared extensions, but would not contribute to upstream augmentation.
- Unless network charges were restructured the absence of a distributor contribution towards network extensions would mean some customers would over-contribute.
- The risk to distributors of having to pay for large numbers of expensive shared extensions would be removed.
- Distributors would fund upstream augmentations of the network. Overall, distributors would contribute a lower share of connection costs than under Option 1.
- The reimbursement scheme would provide equity for customers who pay for assets that are utilised by later connecting customers, but would have administrative costs.

Option 4

- The distributor contribution would be based on fixed revenue offsets, which could be determined by the Tribunal. This approach is more transparent and relatively simple to administer, but is less cost reflective between individual customers.
- Customers would pay the difference between the cost of connection and extension assets and the distributor contribution.
- Distributors would pay the fixed revenue offset and the cost of upstream augmentations of the network. If these augmentations are not economic, the cost may be reflected in higher average network charges.

¹⁶ Attachment 2 provides more detailed information about the anticipated effects of the working group's proposal. Attachment 2 is also relevant to Options 3 and 4 to the extent that they adopt the working group's recommendations.

- The overall position of distributors and customers would depend on the level of the fixed revenue offsets, and any associated tariff restructuring.
- The risk to distributors of having to pay for large numbers of expensive, uneconomic shared extensions would be reduced.
- The reimbursement scheme would improve customer equity but increase administration costs.

The Tribunal would like to receive submissions from interested parties by 1 May 2000 concerning the relative merits of these options, the issues raised, and any other matters considered relevant.

A central question that has arisen is whether a single approach that meets the test of simplicity and transparency can also prove effective when applied uniformly across NSW. There may be advantages in recognising regional differences.

One possibility is a menu approach, whereby the Tribunal sets out a limited number of options. Under this approach the distributors would choose the capital contributions framework that is most suited to the characteristics of their network. The Tribunal would consider having a transition period (during which time the status quo would prevail). At the end of the transition period, the distributor would choose one of the options, to be binding until the end of the regulatory period.

If the Tribunal decides to adopt a menu approach, the models described above are not necessarily the options that will be available to distributors.

The Tribunal invites comments on the merits of allowing distributors a choice in the approach that they apply in their service area, to be selected from a limited menu of approaches nominated by the Tribunal.

ATTACHMENT 1 SUMMARY OF INTERSTATE APPROACHES

	Criteria for distributor contribution	Extent of potential customer liability				Reimbursement scheme
		<i>Own asset</i>	<i>Dedicated extensions</i>	<i>Shared extensions</i>	<i>Upstream augmentations</i>	
South Australia	Distributor pays small customers: \$3000 Distributor pays large customers: \$1200 + (3 x DUOS)	Customer pays (provision of connection asset is contestable).	Cost less distributor contribution (provision of extensions is contestable).	Cost less distributor contribution less downstream customer reimbursement (provision of extensions is contestable).	Customer's contribution determined by reference to the number of years that the distributor's capex program has had to be accelerated to accommodate the customer (assumed network growth 3% pa).	Refund payers reimburse the upstream customer an amount that reflects (a) the costs borne by the upstream customer and (b) their expected electricity demand (16 Amps for residential customers).
Victoria	Contribution incorporated into <i>fair and reasonable</i> charges.	Customers are charged a fixed connection charge (provision of connection asset is not contestable).	Distribution business entitled to recover <i>fair and reasonable</i> charges for connecting a customer to the network (provision of extensions is contestable).	Distribution business entitled to recover <i>fair and reasonable</i> charges for connecting a customer to the network (provision of augmentations is contestable).	Distribution business entitled to recover <i>fair and reasonable</i> charges for connecting a customer to the network.	No legislated reimbursement scheme. Distributors encourage customers to suggest potential beneficiaries when contemplating a network extension.

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	Criteria for distributor contribution	Extent of potential customer liability				Reimbursement scheme
		<i>Own asset</i>	<i>Dedicated extensions</i>	<i>Shared extensions</i>	<i>Upstream augmentations</i>	
Queensland	Policy is still being developed. At present the distributor contributes a fixed 22.5% of the connection costs of franchise customers. Large contestable customers, or contestable customers requiring a significant system augmentation, can be required to contribute towards the full costs of connecting them to the network. Other contestable customers are subject to a zoning system.					
Western Australia*	Test of commercial viability: cost of assets less net present value of investment (calculated up to 15 years).	Customer pays (provision of connection asset is contestable).	Cost less distributor contribution.	Cost less distributor contribution less downstream customer reimbursement.	Cost less distributor contribution less downstream customer reimbursement.	Not documented anywhere, but Western Power makes ad hoc payments to existing customers where appropriate.
Tasmania	Policy is still being developed. At present customers and distributors negotiate a price with recourse to an arbitrator. Tasmania is considering the use of a regulatory test similar to that used by the ACCC for transmission services; if there is a net market benefit, distributor pays.					
New South Wales (current framework)	No distributor contribution.	Customer pays.	Customer pays.	Distributor pays.	Distributor pays.	No reimbursement scheme.
New South Wales (CCWG's proposed framework)	Economic test: Present value of (revenues less operating costs less appropriate upstream asset related revenues) over 30 years.	Customer pays.	Cost less distributor contribution.	Cost less distributor contribution less downstream customer reimbursement.	Augmentation costs to be recovered from dominant load customers, subject to economic test.	Subject to a 6 year time limit, refund payer pays in accordance with an engineering assessment of the proportion of assets utilised.

* Policy applies to contestable customers only, franchise customers are governed by a variety of 'historical' policies.

ATTACHMENT 2 INDICATIVE ESTIMATES OF PROPOSED FRAMEWORK

A2.1 Broad impacts

The 'proposed framework' referred to in this attachment is the framework proposed by the capital contributions working group.

The proposed framework would substantially alter the obligations of customers and distributors. The obligations of the parties under the current arrangements and the proposed framework are compared in the table below.

Table A2.1.1 Comparison of current and proposed frameworks

	Current framework	Proposed framework
Customer pays:	<ul style="list-style-type: none"> • connection costs • dedicated extension costs 	<ul style="list-style-type: none"> • connection costs • dedicated extension costs • customer's share of shared extension costs • augmentation costs (subject to a dominant load test) • reimbursement of customers who have paid for assets new customer utilises • less distributor's revenue offset • less reimbursements from customers connecting later.
Distributor pays:	<ul style="list-style-type: none"> • shared extension costs • augmentation costs 	<ul style="list-style-type: none"> • augmentation costs (where the customer is not a dominant load customer) • distributor's revenue offset (equal to net present value of investment) <p>But</p> <ul style="list-style-type: none"> • where revenue offset is greater than sum of extension and augmentation costs, distributor pays the lesser sum.

Customers required to pay more under the working group's proposed framework are those:

- seeking a connection that requires an 'uneconomic'¹⁷ shared extension of the network
- requiring a dominant load and seeking a connection that requires an 'uneconomic' augmentation of the network.

'Uneconomic' connections tend to be more common in rural areas. Therefore, the working group's proposal is likely to lead to an increase in the *proportion* of capital contributions paid for by rural customers. There is likely to be a decrease in the *proportion* of capital contributions paid for by some urban customers.

¹⁷ In the context of this attachment, the term 'uneconomic' derives its meaning from the economic test formulated by the working group and discussed in section 4.1. The economic test has regard to certain factors - such as the cost of the connection and the expected revenues to be derived from the connection - to determine whether or not an application is economic. However, tariff structures do not always accurately reflect marginal cost and anomalies may arise in allocating long-term costs. Therefore, it is important to note that an undertaking that is 'economic' in terms of economic theory may be deemed 'uneconomic' when the working group's proposed test is applied.

The introduction of the distributor’s revenue offset may mean that overall, distributors fund more capital investment in electricity networks than previously. In many cases, distributors would be required to make a contribution towards assets currently funded by the customer. This is likely to be particularly relevant for urban customers, as in general urban customers are more profitable for the distributor. The distribution companies that account for the majority of urban customers – Energy Australia and Integral Energy – anticipate capital expenditure increases of around \$15m pa each under the proposed framework.

Table A2.1.2 details the overall effects that the distributors expect the proposed framework to have on their businesses.

Table A2.1.2 Estimated impact on capital expenditure and customer contributions under the proposed framework

	Energy Australia	Integral Energy	North Power	Advance Energy	Great Southern Energy	Australian Inland Energy
Capital expenditure (relative to existing levels)	10-13% increase	25-30% increase	5% increase	No significant change	na	approx. 40% increase
Number of customers required to make capital contributions	Small decrease	Large decrease	Large increase*	Moderate increase	No significant change	Large decrease
Number of customers required to make large capital contributions	Large decrease	Large decrease	Large increase*	Moderate decrease	No significant change	Medium decrease

Source: Initial estimates prepared by NSW distributors.

* NorthPower’s estimates allow for joint applications for connection that they expect to occur under the current framework.

NorthPower, Advance Energy and Integral Energy are concerned that the current framework leaves them vulnerable to groups of landholders who apply for expensive shared extensions. On one occasion, Advance Energy was obliged to fund a shared extension to a group of landholders costing \$500,000. These distributors expect capital expenditure levels to increase as customers become progressively more aware of the opportunities available under the current framework. NorthPower estimates that approximately 10,000 to 20,000 people could request connections these circumstances. The cost of each of these rural connections could range from \$5,000 to \$100,000. Among other objectives, the working group’s proposals are designed to reduce this risk.

Australian Inland Energy and Great Southern Energy do not place the same emphasis on this issue.

A2.2 Case studies

At the Tribunal’s request, members of the capital contributions working group developed the following case studies to demonstrate the effects of the proposed framework on different customer types. Table A2.2.1 presents the figures underlying the calculations.¹⁸

¹⁸ It is important to note the large impact on these examples of the distributor contribution rate which determines the size of the revenue offset. (Shown in rows D and E in Table A2.2.1.) Detailed long term cost information is required to calculate this figure. The distributors provided the distributor contribution rates used in these case studies. They are preliminary estimates only and have not been validated by the Tribunal. The case studies should therefore be considered as illustrative examples only.

The calculations presented below have not been verified by the Tribunal; they are estimates provided by the working group. The case studies described below should not be interpreted as representing the Tribunal's preferred position.

The case studies use the following abbreviations:

AC	augmentation costs	LV	low voltage
CC	connection costs	NCC	net cost to customer
DEC	dedicated extension costs	RC	reimbursement costs
DRO	distributor revenue offset	SEC	shared extension cost
HV	high voltage		

Case 1: Small urban customer

This example relates to urban residential and small business customers. A single customer connects to the network. Under either framework, the customer must pay connection costs and any dedicated extension costs. The customer's contribution is reduced by the value of the distributor's revenue offset. This outcome occurs regardless of any augmentation required, because a small customer is not classified as dominant load.

<i>Current framework</i>	CC	+	DEC		=	NCC
	500	+	4000		=	4500
<i>Proposed framework</i>	CC	+	DEC	-	DRO	= NCC
	500	+	4000	-	1200	= 3300

Customer pays \$1,200 less under proposed framework.

Case 2: Large urban customer

This example could relate to a factory, an all-electric fast food outlet, or a large office. A large urban customer connecting to the network is generally expected to be a profitable investment for the distributor. In Case 2, as the DRO is greater than the sum of DEC and SEC the distributor pays for the entire extension.

If the customer is not classified as dominant load, the distributor also pays for any augmentation costs (see Table A2.2.1). If the customer is classified as a dominant load, the distributor pays any augmentation costs until the distributor's contribution reaches the value of the DRO. Thereafter, the customer pays.

The customer is still required to pay for their connection assets.

<i>Current framework</i>	CC	+	DEC		=	NCC
	500	+	48,000		=	48500
<i>Proposed framework</i>	CC	+	DEC	+	SEC	- DRO = NCC
	500	+	48,000	+	28,700	- 201,920 = 500

Customer pays \$48,000 less under proposed framework.

Case 3: Underground residential development

This examples deals with an URD requiring a 1 km extension. Under the working group’s proposal, the developer is responsible for LV extension and reticulation. The distributor will provide augmentation, HV and substation. Customers are responsible for consumer mains when they connect.

<i>Current framework</i>	DEC				=	NCC	
	30,000				=	30,000	
<i>Proposed framework</i>	DEC	+	SEC	-	DRO	=	NCC
	30,000	+	30,000	-	30,000	=	30,000

Customer pays the same under proposed framework.

Case 4: Multi-tenant property

With a multi-tenant high rise development, the developer is responsible for LV reticulation and substation (excluding transformer). The distributor provides augmentation, HV and transformer.

<i>Current framework</i>	CC	+	DEC			=	NCC
	20,000	+	100,000			=	120,000
<i>Proposed framework</i>	CC	+	DEC	-	DRO	=	NCC
	20,000	+	100,000	-	20,000	=	100,000

Customer pays \$20,000 less under the proposed framework.

Case 5: Small rural customer

This example applies to rural residential customers and small farms. It assumes that the customer requires a 1 km extension to the network, and that it is not possible for this extension to be shared. The customer’s contribution is reduced by the value of the distributor’s revenue offset.

<i>Current framework</i>	CC	+	DEC			=	NCC
	500	+	11,558			=	12,058
<i>Proposed framework</i>	CC	+	DEC	-	DRO	=	NCC
	500	+	11,558	-	200	=	11,858

Customer pays \$200 less under proposed framework.

Case 6: Large rural customer requiring augmentation

This example could apply to a farm, winery or factory located in a rural area. If the customer requires capacity of more than 100 Amps they will be classified as dominant load, and will be responsible for augmentation costs. In this case, the amount the customer pays depends on the expected value to the distributor.

<i>Current framework</i>	DEC					=	NCC
	100,000					=	100,000
<i>Proposed framework</i>	DEC	+	AC	-	DRO	=	NCC
	100,000		600,000	-	262,500	=	437,500

Customer pays \$337,500 more under the proposed framework.

Case 7: Joint application by ten small rural customers

As in case 5 above, if the joint application for a network extension is not expected to be profitable for a distributor, customers will pay more in capital contributions.

<i>Current framework</i>	CC					=	NCC
	50,000					=	50,000
<i>Proposed framework</i>	CC	+	SEC	-	DRO	=	NCC
	50,000	+	150,000	-	2,000	=	198,000

Customers pay \$148,000 more under the proposed framework (ie. \$14,800 more each).

Case 8: Customer required to fund a reimbursement

This example demonstrates the operation of the reimbursement scheme. It assumes that within the past six years, a customer has connected to the network incurring dedicated extension costs of \$4,000 (following the model in Case 1). A second customer seeks a connection $\frac{3}{4}$ of the way along the first customer's extension. The second customer is required to reimburse the first customer for half of $\frac{3}{4}$ of the first customer's dedicated extension costs (ie $\frac{1}{2}$ of \$3,000 = \$1,500). The second customer must also pay its own connection and dedicated extension costs. (Note that the customer contribution of case 1's customer is now reduced to \$3,300 - \$1,500 = \$1,800.)

<i>Current framework</i>	CC	+	DEC			=	NCC
	500	+	2000			=	2,500
<i>Proposed framework</i>	CC	+	DEC	+	RC	-	DRO = NCC
	500	+	2000	+	1500	-	1200 = 2800

The customer pays \$200 more under the proposed framework.

Table A2.2.1 Basis for calculations of case studies

		Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8
Number of new customers		1	1	1	1	1	1	10	1
Capacity (A)	A	60	200	1200	20x60	60	1200	200	120
Energy per annum (MWh)	B	10	631	150	100	10	1250	100	10
Distance from network	C			1 km		1 km	25 km		
Distributor contrib. rate (\$/MWh)	D	120	320	200	200	20	210	20	120
Distributor revenue offset (\$)	E = B x D	1,200	201,920	30,000	20,000	200	262,500	2,000	1,200
Connection costs (\$)	F	500	500	-	20,000	500	-	50,000	500
Dedicated extension cost (\$)	G	4,000	48,000	30,000	100,000	11,558	100,000	-	2,000
Potentially shared extension cost (\$)	H	-	28,700	30,000	-	-	-	150,000	-
Share of Shared Extension Cost (\$)	J (<=H)	-	-	-	-	-	-	-	-
Augmentation Cost (total) (\$)	K	20,000	100,000	50,000	200,000	-	600,000	-	-
Dominant load augment. Cost (\$)	L (<=K)	-	-	-	-	-	600,000	-	-
Refund cost (\$)	M	-	-	-	-	-	-	-	1,500
Current framework									
Customer cost (\$)	N = F+G	4,500	48,500	30,000	120,000	12,058	100,000	50,000	2,500
Distributor cost (\$)	P = H+J+K	20,000	128,700	80,000	200,000	0	600,000	150,000	0
Proposed framework									
Customer cost (\$)	Q=F+G+H+K+M-E	3,300	500	30,000	100,000	11,858	437,500	198,000	2,800
Distributor cost (\$)	R=K-L+ <i>least of (G+H+L+M) or E</i>	21,200	176,700	80,000	220,000	200	262,500	2,000	1,200
Extra customer contribution (\$)	S=Q-N	-1,200	-48,000	0	-20,000	-200	337,500	148,000	300
Extra distributor contribution (\$)	T=R-P	1,200	48,000	0	20,000	200	-	-	1,200
							337,500	148,000	

ATTACHMENT 3 MEMBERS OF WORKING GROUPS

A3.1 Members of the Capital Contributions Working Group

Mark Aiken	Electricity Industry Ombudsman's Office
Trish Benson	Public Interest Advocacy Centre
Guy Chick	Australian Inland Energy
Chien-Ching Lim	Independent Pricing and Regulatory Tribunal of NSW
Ian Christie	Customer (Energy User's Group)
Rod Cook	Ministry of Energy and Utilities
Jim Edgecombe	Integral Energy
Barry Goebel	Customer
Terry Holmes	NorthPower
Tony Markus	EnergyAustralia
Joyce Monk	Customer
Adrian Ray	Australian Inland Energy
Paul Topfer	NorthPower (Chairman)
Adriaan VanJaarsVeldt	NSW Treasury
Sara Webb	NSW Premier's Department
Lawrence Zulli	Advance Energy

A3.2 Members of the Capital Contributions Implementation Working Group

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Rod Cook	Ministry of Energy and Utilities
Jim Edgecombe	Integral Energy
Leith Elder	Great Southern Energy
Terry Holmes	NorthPower
Tony Markus	EnergyAustralia
Adrian Ray	Australian Inland Energy
Paul Topfer	NorthPower (Chairman)
Adriaan VanJaarsVeldt	NSW Treasury
Lawrence Zulli	Advance Energy