REGULATED INDUSTRIES COMMISSION

CAPITAL CONTRIBUTION POLICY

FOR THE

TRINIDAD & TOBAGO ELECTRICITY COMMISSION

FINAL DECISION

June 2008

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APPENDICES

1.0 INTRODUCTION

The Regulated Industries Commission (RIC) is the economic regulator of the electricity and water sectors and is responsible for the regulation of prices, standards and conditions of supply of services.

The RIC as part of the Final Determination (Rates and Miscellaneous Charges) for the regulation of Electricity Transmission and Distribution for the period June 01, 2006 to May 31, 2011, had identified the treatment of Capital Contribution (CC) as a specific issue requiring further investigation. It did so because it recognized that the whole issue of customer capital contributions is a contentious one. It is also not straight-forward to resolve because the calculation of connection costs is complex and what constitutes connection costs is to some extent subjective. Concerns have also been raised about the incentive effects of the current arrangements.

1.1 Capital Contribution Working Group

In September 2006, the RIC established a Capital Contribution Working Group (CCWG) which included members of the national community representing all stakeholders inclusive of the service provider and its customers, with a specific goal of assisting in developing detailed proposals for the RIC's consideration. An abridged version of the terms of reference and the composition of the Working Group are attached as **Appendix I**.

The CCWG submitted its report in March 2007. Copies of the Working Group document were made available to a large section of stakeholders and were also made available on the RIC's website Having received no comments, the policy document was finalized by the RIC. This document summarizes the key features of the current framework for the treatment of CC, examines the recommendations of the CCWG and presents the RIC's final decision.

The RIC wishes to commend the members of the Working Group for their valuable contribution in identifying some of the key issues and for making proposals to address these issues.

1.3 Structure of the Document

The rest of this paper discusses the CC policy proposals and rationale in more detail:

- **Section 2** lists the summary recommendations of the Working Group.

- **Section 3** discusses the main issues in respect of capital contribution policy.

- **Section 4** sets out the key elements of the approach to policy and the RIC's final proposals.

2.0 REPORT OF THE WORKING GROUP

The CCWG submitted its report in March 2007. The Working Group identified some of the key issues and made recommendations to the RIC for addressing the issues/concerns. The CCWG proposed that:

- **Point of connection** - should be defined as that point on the network where the use of assets changes from a shared basis to assets fully dedicated to the customer.
- **Valuation of Assets** - contributed assets should be included as part of the regulatory rate base.
- **Ownership/Return on Investment** - contributed assets should be vested in the service provider.
- **Funding Options** - financial assistance to enable residential customers to make Capital Contribution payment by the existing programmes e.g National Self Help should be rendered only to those who qualify via a means test.
- **Contestability**- Suggestions were made as follows:
    - Customers should be entitled to the option of using T&TEC or contracted services.
    - T&TEC should pre-qualify a list of contractors from which customers can choose.
    - T&TEC would also be responsible for specifying the technical criteria to which these contractors must adhere.
    - T&TEC should also inform customers about the average costs of undertaking works in various geographical areas.
- **Cost Sharing** - Cost sharing is applicable in instances where more than one customer benefits from the plant and equipment installed for a connection.
- **Reimbursement Policy** - T&TEC should be responsible for implementing a reimbursement policy for customers required to make Capital Contributions.
- **Administrative Costs** – These should not be included in CC payments.

- **Multi-occupant Developments** - The developer should be responsible for all costs associated with making an electricity supply available to each allotment - including all design, civil works, using T&TEC's specifications. Developers should use approved consultants and contractors. The following are possible options with respect to both the execution of works and payment of costs:
    - T&TEC carries out the capital works (non-civil) and this cost is paid by the developer as a cash contribution. The developer is responsible for executing the necessary civil works. The civil works are treated as a non-cash contribution; or
    - The developer organizes for all work to be carried out subject to T&TEC's technical and design requirements, these works are treated as a non-cash contribution.
- **Monitoring Function** – The RIC should monitor the service provider to ensure that it adheres to the requirements of the new capital contribution framework.
- **Proposed Method for Capital Contribution Calculation** - The formulae for Capital Contribution computation for the different rates are summarized below:

Rates A, B

Capital Contribution (CC) = Project Cost less $IR_{(n=5)}$

Rates D1-D5, E1-E5

Capital Contribution (CC) = Project Cost less $IR_{(n=2)}$

IR represents the Present Value of projected future tariff revenues earned from the connection over a period of **n** years.

- **Dispute Resolution -** RIC should institute a fair dispute resolution procedure to deal with any issues/complaints arising out of Capital Contribution determinations between T&TEC and customers.
- **Implementation** - RIC should establish a time frame for T&TEC to implement revisions to the Capital Contribution procedure agreed during discussion between two parties.

3.0 DISCUSSION

3.1 Background

A capital contribution is a cost that is paid upfront to facilitate infrastructure works for connecting to the network. It is used as a means of recovery from individual customers the specific costs their connection imposes on the network. At present, customers make CC for some network costs, while other related costs are recovered via 'use of system' charges. The way the balance is struck between customer contributions and network tariffs has important implications.

The issue of CC is not specific to the electricity industry but is common to other network/utility industries such as water and waste-water. At the heart of the matter is the allocation of costs for new connections between existing and prospective customers. At one extreme it is clearly unreasonable for someone wishing to connect a new house to the electricity distribution network to pay, for example, the full cost of a sub-station simply because the existing resources are fully committed. At the other extreme, it is equally unreasonable for someone wishing to connect a house, in a remote area or where existing capacity is known to be highly constrained, to expect existing customers to pay for, in this case, a new sub-station. Further, some of the new equipment required may be used initially by one customer, but shared with other customers later as the network expands further.

For both existing and new customers, the allocation of the associated costs needs to be both equitable and transparent. This therefore requires a careful assessment of the impact of the CC and the overall connection charging regime. There are also other issues of importance, such as asset ownership, contestability, etc. In fact, any framework for establishing capital contribution policy must provide clear guidelines, be relatively simple to follow and be applied consistently, and equitably to both customers and service provider.

For the purpose of discussion, the key issues with respect to capital contribution may be grouped into eight broad areas:

- pricing principles for capital contributions;
- a definition of the point of connection;
- allocation and sharing of costs;
- asset ownership;
- contestability of customer-funded works;
- an appropriate approach for the recognition and valuation of assets;
- reimbursement policy; and
- funding connection assets.

3.2 Pricing Principles for Capital Contribution

The CC payment is viewed as a network price or tariff which is paid upfront rather than over time, thus the principles used to determine CC should therefore be consistent with the approach to regulating other network tariffs. In common with setting other tariffs, the principles should include:

- **Economic efficiency** – that is, the prices should reflect the economic costs of service, signal future investment costs and should encourage allocative and productive efficiency. Economic efficiency requires that the expected network revenue from the new customer must at least cover the incremental cost of supply. Prices send signals to customers as to the cost of service provision in order that these costs be taken into account in usage decisions. Similarly, CC payments provide "locational signals" which help to guide network investment. If the costs of connection are hidden from the high-cost customer, cost effective alternatives to connection may not be considered. However, efficiency arguments for signaling costs to new users become problematic for shared assets. This is discussed later.
- **Promote equity, stability and consistency of outcomes** – that is, by having regard to the impact of tariffs on customers, and being consistence and transparent. In the absence of CC payments, certain connections may be uneconomic and would place upward pressure on average prices as existing customers would have to subsidize these customers. The avoidance of 'free-

rider' problem is also important, as the connection assets paid for by the first customer may be later shared with other customers seeking connections.

- **Cost recovery** – that is, prices, as far as possible, should fully recover the costs of efficient operations. The price signals customers receive through the costs they are required to pay for network connection play an important role in determining how efficiently the network system develops.

3.3 Point of Connection

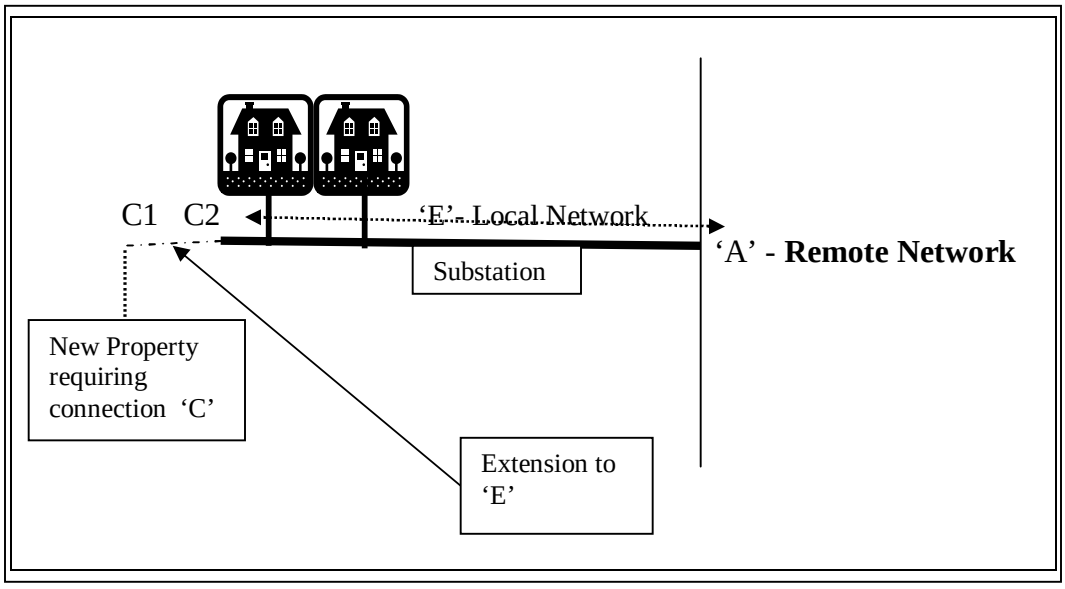
The point of connection (which is a physical location) sets the boundary between the costs that are to be recovered from connection charges and those that are to be recovered through user charges. The point of connection therefore is defined as that point on the network where the use of assets changes from a shared basis to assets fully dedicated to the customer (this definition was also proposed by the CCWG). Downstream of this connection point, the customer is responsible for the cost of any connection works. The question that therefore arises is whether a customer should bear any of the costs associated with any of the augmentation works associated with his connection. Moreover should customers who later connect to the network and utilize assets paid for by a previous customer be allowed to "free-ride".

In **figure 1** below, 'C' represents the customer's premises requiring connection, while 'A' represents the remote network, which in the case of electricity sector would be the transmission network and is the responsibility of the service provider. Section E represents the existing local network. The area between C1 and C2 is the extension to the local network required to facilitate the new property requiring connection. It is the section 'E' which is generally the focus of contention between the service provider and the customer. Customers argue that from the "connection point" C1, the service provider is responsible for everything upstream (i.e. all the extension). On the other hand, the service providers argue that uniform application of such an interpretation would expose them to substantial and persistent under-recovery of the construction and maintenance costs, especially in rural and/or less densely populated areas. Therefore, they argue that section 'E' costs should not automatically be borne by other customers and that the

"connection point" is in fact C2. It is also common to define exceptional circumstances where the customer is liable for certain upstream costs from the point 'C2'. The CCWG did not deal with this issue in its report.

CCWG had noted that under section 48(1) of the T&TEC Act (Chapter 54:70), any potential customer whose property is located more than 60 feet from any distributing main is required to defray the additional cost arising from the connection. Hence, in effect, the point of connection can be considered 60 feet from the customer's property. Further the CCWG had indicated that change to this definition would require amendment to T&TEC Act.

Figure 1 – Connection, Extension and Augmentation



3.4 Allocation and Sharing Costs

To understand the allocation of costs between different parties and in keeping with the "point of connection" definition, it is helpful to break down the process of connecting new properties to the distribution and transmission network into the following elements:

(i) **The service connection** – i.e. connecting a service wire from the new house to the nearest light pole.

(ii) Erecting additional light pole(s) if none is present nearby and connecting these to the existing network.

(iii) Upgrading the local network to accommodate the new connection.

(iv) Additions and/or upgrades to the transmission network to accommodate the new connection.

The costs associated with components (i) and (ii), that is, 'C' in figure 1, are sometimes referred to as "shallow"[1] reinforcement and are almost always funded by the party seeking the connection. Component (iv) is termed "deep" reinforcement, that is, 'A' in figure 1, and such costs are invariably funded by the service provider. Recovery of these costs should then occur through general tariffs over time, as augmentation adds to the shared system owned by the service provider. However, there are exceptions, for example, in less densely populated areas or where it will be difficult to recover augmentation costs through general tariffs in the foreseeable future. In some jurisdictions, the regulator approves the upfront recovery of deep reinforcement costs from the customer, once the following conditions are met:

- the costs are specific to the customer;
- the costs are large in relation to the service provider's overall capital works programme; or
- the project can be shown to be persistently uneconomic.

In the event that affordability is a problem, it is argued that the funding issue should be one for the government, rather than the service provider, to decide. Costs associated with component (iii), that is, 'E' in figure 1, represent the impact on the local network and falls between these extremes and may be funded either directly by the connectee or through user charges. As indicated above, it is the component (iii) which is the main focus of contention.

[1] This classification can vary from regulator to regulator, for example Ofgem refers to the "shallow" as the cost associated with component (i) alone, items (ii) and (iii) are referred to as "shallowish" cost and item (iv) as "deep" costs.

Given these problems, some regulators and utilities simply differentiate between connection and augmentation costs. Connection costs include the costs of all assets that are dedicated for the use of the customer and paid by the party seeking the new connection. Augmentation costs refer to those costs which are shared and paid for by the entire customer base.

A **connection charging policy** determines the allocation of costs between the party seeking the connection and the existing customer base. If this allocation is not properly balanced, an inappropriate element of the cost burden of connecting new properties falls onto one party or the other, with important implications. In practice, it is difficult to distinguish between capital works provided for specific customers and those that cover future growth expectations, or general reliability or safety improvements. When the connection of one or more customers necessitates the upgrading of part of the existing infrastructure it is difficult to determine the extent of the liability of each new customer for the additional infrastructure works.

These difficulties are best illustrated by considering the extremes of connection charging:

- the connectee (individual requesting the connection) paying the full cost of the new connection; and
- the customer base (all customers) funding the entire cost of the connection through user charges.

Connectee pays all

Attributing all costs associated with the connection to the party seeking the connection has the following key advantages:

- Existing customers are protected from paying towards the costs of work from which they will not benefit.

- It provides a strong financial signal to connectees to encourage them to locate in areas where capacity exists and to avoid parts of the network where capacity is limited[2]. This encourages efficient use of the assets.
- The costs of connection are transparent.

On the other hand, there are a number of disadvantages:

- In areas where the network is constrained, the cost of connecting new properties becomes so high that it can create a barrier to new entrants. Elements of the utility's networks, such as sub-stations etc., are high cost items and it may not be reasonable to expect connectees to fund these in isolation.
- The new connectee may end up funding indirect network improvements, such as improved quality of service, which benefit other customers.
- The cost of connection could vary widely depending on geographic location.
- There is also a "free rider" problem. The first connectee has to meet the costs of upgrading the network in an area, but subsequent connectees are likely to benefit from any new capacity released. This is a feature of utility networks where upgrades come in discrete block sizes rather than as a continuum. The capacity released by an upgrade will almost always exceed the requirements of the new connectee, as the level of asset utilization is unknown at the time of connection. Allocating the "spare" capacity and deciding whether or not the first comer should receive a refund from subsequent connectees is problematic, as the potential for additional customers to connect to the new assets under consideration is often uncertain at the time of construction.

Customer Base pays all

Spreading the entire connection costs across the existing customer base has the following key advantages:

[2] Other factors such as the connectee's ability to pay will also affect this decision.

- It facilitates the connection of new customers. All existing customers contribute a small amount to the work necessary to accommodate the new connection. The new connectee will, in turn, pick up a small element of the costs of connecting future customers.
- The indirect benefits from work on the network, such as improved service quality, are funded by all customers and not just the connectee.
- The issue of "free-riders" is eliminated.

Spreading connection costs over the entire customer base has the following key disadvantages:

- Locational signals are lost. Customers (through user charges) end up paying potentially high connection costs even though there is excess network capacity in other areas. Alternatively, because of the role price plays in investment decisions, it is critical to ensure that electricity networks are not extended at the expense of more cost effective and energy efficient alternative sources of supply.
- Overall user charges to customers will be higher as all investment in the network is funded through user charges.

To overcome many of the problems/issues highlighted above, regulators often utilize one of two main approaches:

- The first approach utilizes a seemingly arbitrary sharing ratio to split costs between the connectee and the wider customer base. There are many variants to this approach. However, the common thread being that a utility, in keeping with what is often a statutory obligation, will connect properties where it is "practical to do so" at "reasonable cost". The "practical to do so" is sometimes also defined in legislation by including a minimum distance from the nearest utility main. The "reasonable cost" is funded by the customer base. But there is recognition that future income will be derived from the new customer and thus provide revenues for the utility. Anytime the cost of connection exceeds the "reasonable cost" the connectee is required to contribute towards these

costs, i.e. pay capital contribution. This is broadly the approach currently utilized by T&TEC.

- The second approach relies on incremental costing and requires that the connectee pay those costs which exceed the revenues expected from the new connection. Often these amounts are calculated in present value terms.

Another issue that needs to be addressed is the specific costs that should be included as CC contributions.

Service Providers have been adopting one of three broad approaches in deriving charges for connection to their networks. The first approach involves an estimate of the total costs that will be incurred as a result of connecting new load to the system, including the costs of all network reinforcement. This is often described as a "deep" connections policy. The second approach involves an estimate of the connection assets, excluding the costs of reinforcement at higher voltage levels. Reinforcement costs are basically confined to the "local network" that is, the area close to the point of connection. But costs can include more general reinforcement costs if the connectee is the main user of the asset. This is often termed a "shallowish" connections policy. The third approach involves an estimate of those assets required to connect a customer to the system, excluding the costs of extension and reinforcement of the distribution system. Consequently, this type of connection only reflects the costs of providing the service line or cable necessary to connect a customer to the system. Hence, it is called a "shallow" or "local" connections policy. However, a fourth approach has been used by a small number of service providers, where the costs of all the assets for a new connection are deemed to be part of the general system, and are therefore recoverable from all users in the form of user tariffs or use of system charges, known as a "zero cost" connections policy.

Appendix II details the practice in different jurisdictions.

3.5 Asset Ownership

An associated issue is the question of ownership of connection assets. The WG recommendation is that while a customer pays for the contributed assets, ownership of these assets must be vested in the service provider, as the service provider is solely responsible for maintaining and replacing these assets.

The RIC is in agreement with this recommendation as retention of these assets by the customer means that the customer would be responsible for the ongoing upkeep and ultimately the replacement of the assets. This will not only be burdensome for the majority of customers, but it will create fragmentation of asset ownership, thereby creating a barrier to contestability as the customer could be subject to numerous upstream access arrangements. More importantly, ownership of assets will bring rights and responsibilities, including technical and public safety issues. Moreover, the service provider will want to ensure that the integrity of its system is not impaired.

3.6 Reimbursement Policy

Under the current methodology employed to determine CC payments, a customer pays for any extension to the system (less the offset of revenues from the connection in the third year) that is required in order to connect the customer to the system. If another customer seeks a connection which would require the use of the assets funded by the first customer then the second customer is not required to refund to the first customer any portion of the initial costs. Consequently, a "free-rider" problem has arisen. In essence it means that the first customer has paid for dedicated assets that are subsequently shared. As noted, currently no mechanism exists to reimburse a customer that has funded connection assets which are subsequently shared by others whose emergence was not anticipated at the time of the original application. There are two options which have been used in some jurisdictions. The concept of related parties' application as single application, if a number of single applicants are known in advance. This option is a complex one to implement and is also open to abuse. The second option is a reimbursement policy. In fact, the CCWG favours a reimbursement policy and has advanced the following tenets that should be applied to the Reimbursement scheme:

- The Capital Contribution Policy should ensure that the service provider duly informs the customer of the terms and conditions of the reimbursement scheme.
- Reimbursement to be credited to the property account. Primarily because it may be difficult to find the original owner and the original owner can capitalize expenditure in the sale of the property.
- The time limit over which the reimbursements to be offered not to exceed 6 years from the date of the original customers' application.
- Reimbursement not to exceed original contribution except in circumstances where inflation (as calculated by the Central Statistical Office of Trinidad and Tobago) exceeds trend inflation (low levels) then consideration may be given to increasing the reimbursement amount to an amount greater than the original contribution.
- There shall be no reimbursement to industrial or commercial customers as industrial and commercial customers are in a position to capitalize the original Capital Contribution expenditure. However, nothing in the foregoing precludes reimbursement within customer classes.
- No "reimbursement payments" will be made to original customers until the new customer has paid all the amounts due and has been connected to supply.
- The proposed financial computation for the reimbursement scheme is as follows:
    - Original costs of the project and amount of the contribution paid by the original customer/s or connectee/s are obtained.
    - The project costs that would have been incurred if the subsequent customer were part of the group are calculated.
    - The individual shares are calculated as if the subsequent customer was part of the original group. The contribution each customer would have paid is based on the share of the recalculated project costs (as if the two or more customers had applied for initial connections at the same time) using the capital allowance applicable to each customer.
    - The value of the reimbursement to the original customer is calculated by subtracting the revised contribution for each member of the revised group from the contribution made by the original customer/s.

- The value of the reimbursement is time adjusted from the date the original customer was connected to calculate the new customer contribution and the reimbursement to the original customer is reduced, over the cost sharing period, to zero.

3.7 Contestability

Once customers are required to contribute to the cost of assets, it is reasonable for them to expect that those costs are fair, reasonable and efficient. The provision of dedicated assets is in a sense contestable. Customers may wish to choose their preferred operator.

The CCWG recommended that customers should be entitled to the option of using T&TEC labour or contracted services. T&TEC should pre-qualify a list of contractors from which customers can choose. This recommendation will assist the implementation of contestability for customer connection works. T&TEC should also be responsible for specifying the technical criteria to which these contractors must adhere. T&TEC should also inform customers about the average costs of undertaking works in various geographical areas.

3.8 Recognition and Valuation of Assets

Another important issue which must be resolved is the question of how should contributed assets be recognized in the price setting process. Central to this is whether or not contributed assets should form part of the regulatory asset base (RAB). These issues are discussed below.

Many regulators, on the basis of fairness, feel that customers should not pay twice for assets they have funded or which have been funded by government, and have chosen to either exclude these assets from the RAB altogether or not allow a return on equity for price determination purposes. Alternatively, some jurisdictions have chosen to recognize past user funded assets where a past contribution was associated with a clearly identifiable large customer or for dedicated assets, such as connection assets[3]. In such

[3] In such a case the customer would have been responsible for meeting the total cost of such an asset.

instances a specific recognition was made for such a customer in the pricing framework via a rebate. There have also been instances where a cut-off date was chosen and all assets prior to this date have been valued at zero and only contributed assets brought on board after this date are taken into account.

However, contributed assets place obligations on the service provider to operate, maintain, refurbish, and replace that infrastructure. Consequently, all operating, maintenance and administration costs plus refurbishment or replacement costs need to be recognized in regulatory price determinations. This has prompted regulators to include these assets in the RAB and thus these assets are taken into account in pricing decisions. Indeed this was the approach adopted by the RIC in its determination for T&TEC. Although, the RIC allowed no return on equity in its Determination, it was able to avoid the "double-dipping" problem, which is discussed later in this paper. The WG's recommendation is that contributed assets should be included as part of the regulatory rate base.

The RIC sees two main issues arising with respect to the treatment of contributed assets:

- Should the service provider be able to recover a return on capital on these assets? If the answer is yes, would this constitute "double- dipping"?
- Should a service provider be able to account for a return of capital i.e. depreciation?

These are complex issues and, in practice, varying approaches have been adopted. These approaches are ultimately linked to the wider approaches to defining the RAB of a service provider that can be divided into the following:

- A **Financial Approach** - this defines the regulatory capital value of the business by reference to the capital input by shareholders. This approach excludes contributed assets from both the return of and return on capital; and

- An **Asset Serviceability Approach -** this defines the asset base of the business by reference to its continuing ability to deliver specified outputs. This approach includes gifted assets in return of, and return on, capital.

The first approach fails to recognize the ongoing liabilities that the service provider incurs because it is responsible for maintaining and replacing these assets, while the latter approach involves "double dipping". That is, customers would be charged a return on assets that have already been paid for by them. Therefore some modification is necessary in both cases.

With respect to the Financial Approach, the method adopted by Ofwat[4] is instructive. Ofwat limited the initial RAB of the water companies to the market capitalisation of the companies at privatization (averaged over 200 days). This was 9% of the Modern Equivalent Value of the businesses and represented the capital which had been contributed by shareholders. Following the logic of the overall approach, Ofwat explicitly excluded any contributed or gifted assets from the roll forward RAB. Ofwat argued that the shareholders of the company have a right to a return only on the capital they have provided. However, as far as return of capital was concerned, Ofwat allowed current cost depreciation for all existing above-ground assets as well as new capital expenditure to the level of expenditure which companies incurred in order to ensure continued asset serviceability. This approach was paralleled in the treatment of underground assets, which are subject to an infrastructure renewals charge. Under the 1991 Water Act, companies which adopted mains laid by domestic customers were required to make payment in recognition of the revenue that will be recovered from newly connected properties, known as an asset payment.

Adoption of the second approach would mean that contributed assets would be eligible for both a return of and return on capital and hence "double dipping". There are a number of off-setting arrangements which can be used to ensure that this does not occur. One such arrangement is reducing allowed revenue by the value of the gifted assets, in the

[4] Ofwat is the economic regulator for the water and waste-water sector in England and Wales.

year in which they are added to the asset base and thereafter the agency should be allowed to earn a risk-related return on these assets. A variant of this approach is to argue for the inclusion of all assets in the RAB, irrespective of source, but to apply differential Weighted Average Cost of Capital to those assets dependent on their source. This might prove a cumbersome methodology to establish and maintain.

An alternative approach is to argue that the RAB should include all assets, but that differential rebates should be paid to individual groups of customers to reflect the particular contributions, which they have made. This approach is feasible for a small number of large customers but is likely to be administratively complex for a large number of small customers.

Given the above issues, the RIC's preferred approach is one that will impose no additional administrative costs on the service provider, that is to include contributed assets as part of the RAB for the purpose of calculating depreciation charges. However, that portion will not be included for the calculation of a return on capital. The net effect of this approach will be to ensure that the service provider is not disadvantaged in terms of replacing the asset. However, it avoids "double dipping" thus ensuring that customers do not pay twice.

The TOR also requested that the WG propose an appropriate approach to valuation of contributed assets. The WG made no specific recommendation in this regard. As noted in the Final Determination (Rates and Miscellaneous Charges) for the regulation of Electricity Transmission and Distribution (June 01, 2006 to May 31, 2011), the range of asset valuation methodologies commonly applied are generally grouped into two categories: revenue-based and cost-based. The most commonly used methodologies are:

- Historical Cost (variations include original cost);
- Replacement Cost (variations include inflation-indexed);
- Optimised Deprival Valuation; and
- Depreciated Optimised Replacement Cost.

In considering the pros and cons of each methodology for price-setting purposes, the RIC concluded that it would utilize historical cost and include all prudent capital expenditure over the first regulatory period and deduct regulatory depreciation.

The RIC has observed that other regulators adopt one valuation methodology for all assets as contributed assets are indistinguishable in terms of responsibilities and risks. Moreover, in many cases, CC payments are not for complete assets that can be ring-fenced and treated separately because the CC is determined by offsetting the tariffs that will be received by T&TEC. The RIC therefore proposes that for valuation purposes contributed assets be treated no differently than other assets owned by T&TEC.

3.9 Calculation of Capital Contribution

T&TEC's current connection charging policy for customers who are located close to the network (i.e. 60 feet) can be described as "zero cost" because the $150 fee that is charged is utilized as a $95 service deposit (held for default payments) and the remainder used to defray user tariffs. For those customers not located close to the network or who require new or additional capacity, T&TEC operates a "shallowish" connection charging policy, that is, these customers pay the additional cost (i.e. CC payments minus some of the revenue to be derived from the connection) to connect to the network.

The RIC favours a "shallowish" approach, as it would be unfair to allocate "deep" costs to customers. Under this connection charging scheme, customers would be responsible for all "shallow" costs of connection to the network and, where necessary, for local network reinforcement costs, provided that T&TEC had not planned/anticipated such works, and same had not been included in its price limits. This ensures that customers do not pay twice for such costs.

However, for very large industrial customers (i.e D5, E1 and E5 customers) a different approach is necessary, as these customers impose very large loads on the network and these costs are specific to the individual customer. Therefore, it will be unfair to the entire customer base to bear the burden of the increased costs imposed on the network. It

is also easier to identify all the associated costs, including the reinforcement costs on the network, of connecting such a customer to the grid.

Consequently, as a general rule, the RIC favours a "shallowish" approach to connection charging for all customers except very large industrial customers (i.e. D5, E1 and E5) for whom a "deep" approach will be utilized.

The existing method for calculating capital contribution for customers in Rates A, B, D1 and D2 equates the revenue expected from the project in the third year to equate to 70% of the capital sum that T&TEC will expend on the project. The customer is thus required to meet any shortfall via capital contribution payments. For Rate S (street lighting) connection costs are fully met by Government or private citizens. Capital Contributions for customers for Rates D3, D4, D5, E1 and E5 are also funded differently.

The CCWG's proposal is that Capital Contribution should be calculated by deducting the present value of projected future tariff revenues earned from the connection from the total incremental cost to connect the new customer (as shown below in the Box). The period proposed for projected tariff revenue for Rates A and B was five (5) years and for Rates D1-D5 and E1-E5 two (2) years.

Rates A and B Capital Contribution (CC) = Project Cost less IR (n=5) Rates D1-D5, E1-E5 Capital Contribution (CC) = Project Cost less IR (n=2) Where: IR = Incremental Revenue

Although the formula follows an incremental cost approach and in effect estimates the marginal cost of connecting the customer to the network to the marginal revenues that the utility will earn from the connection, the period taken into consideration is much less than the life of the asset and, therefore, inconsistent with the incremental cost principle. If the incremental approach is to be properly applied, then it would also involve forecasting

costs over a long period of time (i.e. over a period of 20 years or more, as these assets have long lives). Consequently, while the RIC is not averse to using an incremental approach, it is not in favour of the time frames proposed in the CCWG report.

3.10 Funding Connection Assets

The CCWG acknowledged that customers are responsible for payment of connection costs. However, the RIC's specific concern in this regard is the ability of vulnerable customers to meet the costs of connecting to the network as these costs can be a significant investment for remote customers. Where connection costs are significant, it generally follows that the investment in those connection assets is unlikely to be economic over a normal level of consumption. Where the service provider is required to fund connection assets, the funding has to come from either a reduced return to the owner or through increased tariffs. To fund a new customer's connection assets through increased tariffs would be inequitable. The CCWG has taken the view that residential customers unable to meet this expense should source financing from the range of available options. These options included the National Self Help Commission and the National Social Development Programme. The RIC notes that the CCWG did not recommend the establishment of any new initiatives in this regard and as such presumes that the existing avenues are adequate.

4.0 CAPITAL CONTRIBUTION POLICY – RIC'S FINAL PROPOSALS

In this section, the RIC's proposals with respect to Capital Contribution policy are detailed.

A. Payment of Capital Contribution and Connection Point[5].

The RIC favours a definition of point of connection as that point on the network where the use of assets changes from a shared basis to assets fully dedicated to a customer (or a set of customers)[6].

Customers, as a general rule, will be responsible for all connection costs up to the point of connection. The service provider, as a general rule, will be responsible for all other costs beyond the point of connection. Additionally, the service provider would be required to demonstrate that the connection is not commercially viable without that capital contribution and that the value of the capital contribution should be no more than the amount that would be required to make the extension commercially viable. Furthermore, the augmentation assets will be required to be at the least cost and optimum size required.

The RIC also proposes that the application of the above general rules are subject to the following exceptions:

- commercial customers would only be required to meet the costs of augmentation works to the local network if provision has not been made for such works within T&TEC's price limits;
- where the connection is for a large load customer, the service provider and customer will negotiate the terms for funding the connection, including the

[5] For multi-occupant dwellings the point of connection refers to the point of connection of the main building and not the connection point of the individual apartments etc.

[6] The proposed point of connection definition is in keeping with Section 48(1) of the T&TEC Act Chapter 54:70, since a distance of sixty feet would generally only cover the distance, for example, from a private dwelling to a light pole located very nearby. In effect, it means that T&TEC would be responsible only for the shallow costs of a connection, all other costs would have to be met by customers.

network augmentation costs (for both the local and remote network) to be paid up-front (if any). In the event of a disagreement, either party can take the matter to dispute resolution (see below); and

- where the connection is for a multi-occupant development (i.e. a multiple-lot development), the developer will be considered as a single customer and will be required to fund all low voltage (LV) and high voltage (HV) assets required to connect that development, once they are for the exclusive use by the development. If however, the assets are likely to be shared with other customers outside the development, then the service provider will be responsible for paying for the HV assets.

B. Reimbursement Scheme

If the contributed assets are eventually shared by other customers connecting at a later time, the customer must be reimbursed through the scheme established and administered by the service provider. The scheme should be as simple as possible and be applicable to all customers connecting at a later date who will use the assets and benefit from the contributed assets. The main tenets of the reimbursement scheme will be to:

- limit the total reimbursements to the amount of the original capital contribution adjusted for inflation. Where the service provider did not do the work, the service provider must apply charges as if it had completed the work itself;
- limit reimbursement within industrial or commercial classes and not by residential customers), as industrial and commercial customers are in a position to capitalize the original Capital Contribution expenditure. However, nothing in the foregoing precludes reimbursement within customer classes;
- reimburse the original large load customer according to the extent to which new customers will utilize those assets, capped at the amount of the original contribution;
- reimburse the original Rate A and B customers (i.e. those using up to 50 kVA) based on a simple apportionment among the potential number of customers);

- limit the period over which reimbursements may be offered to 6 years from the date of the original customer's application;
- reimburse the original customer only when a new customer(s) has paid all the amounts due and has been connected to supply;
- ensure that later connecting customers reimburse the current owner of the property for which the original works were undertaken;
- recover the administrative costs of the service provider for establishing and administering the scheme through network charges; and
- ensure that the original customer is adequately informed of the terms and conditions of the reimbursement scheme.

C. Contestability

Customers should have the option of using T&TEC labour or contracted services. However, T&TEC should be responsible for preparing a list of pre-qualified contractors from which customers can choose. T&TEC would also be responsible for specifying the technical criteria to which these contractors must adhere to, as well as informing customers about the average costs of undertaking works in various geographical areas.

D. Ownership of Assets

Contributed assets should be vested in the service provider. This will avoid the added expense of maintenance and replacement that would arise if customers were to retain ownership of these assets.

E. Recognition and Valuation of Assets

Contributed assets should be treated as part of the Regulatory Asset Base (RAB) for the purpose of calculating depreciation charges but not for the calculation of a return on capital. This will avoid the problem of "double-dipping".

Additionally, contributed assets should be treated no differently than other assets owned by T&TEC in terms of the valuation method used, as contributed assets are indistinguishable form other assets in terms of responsibilities and risks.

F. Capital Contribution Calculation Method

In keeping with the "shallowish" approach to connection charging discussed in section 3.9, the RIC proposes as follows:

- the introduction/implementation of connection fees for customers;
- the use of an incremental approach to calculate capital contribution payments for A-D4 customers, where project costs will be confined to work on the local network. The following formula will apply to these customers:

$CC = IC - IR_{(n=10)}$

Where:

CC	=	Capital Contribution
IC	=	Project Costs (Capital Costs associated with connection)
$IR_{(n=10)}$	=	Incremental Revenue (present value of a 10 year revenue stream directly attributable to the new connection (calculated using a discount rate that is equal to the cost of borrowing allowed in the price limits).

- the very large industrial customers (i.e. D5, E1 to E5) bear the full capital costs of connecting to the network, that is, all augmentation costs (i.e. costs of the local network as well as the remote network) and the associated connection costs; and
- the project costs for all customer categories to only include the capital costs of the assets associated with the new connection. All recurrent costs (maintenance and operation) should be recouped through the tariffs.

G. Dispute Resolution and Monitoring

All customers will have access to the dispute resolution process of the service provider (as approved by the RIC under the "Codes of Practice for T&TEC").

Furthermore, either party can provide the RIC with written details of the complaint for the RIC to facilitate resolution in accordance with the provision of the RIC Act.

Additionally, T&TEC or the customer has the right to refer the matter to an independent body for either mediation or arbitration.

For the purpose of monitoring all aspects of CC policy, the service provider will be required to report to the RIC details of disputes including information on the nature of the dispute, method of resolution and outcome.

KEY DEFINITIONS

- **Capital Contribution** – means a financial contribution made (or the equivalent in the form of assets) by a network user associated with designing, constructing, installing and commissioning the electricity network assets of a service provider.
- **Commercially viable** – that is, an extension will be considered commercially viable if the service provider can be reasonably expected to recover the costs of extension without increasing the tariffs payable by existing network users.
- **Connect (or connection)** – means to establish an effective link via installation of the necessary connection equipment.
- **Connection Assets (or connection equipment)** – means all of the equipment that is used only in order to transfer electricity to or from the electricity network at the relevant connection point or which is installed to support or to provide backup as is necessary for that transfer.
- **Connection Point (Linkage Point)** – means a point at which electricity is transferred to or from an electricity network (or point at which the use of assets changes from being dedicated to one or more customers, to being shared among customers generally).
- **Contestability –** refers to works where the customer has a choice of utilizing a private contractor.
- **Extension** means to enlarge or expand the capability of the electricity network to accept, transport and deliver electricity.
- **Network Augmentation** – means works required to be constructed in order to provide a new customer on the side of connection point where the works are shared among customers generally.
- **Network** – means an electricity distribution network.
- **Network System Assets** – means the apparatus, equipment, plant and building used to convey, and control the conveyance of electricity.

APPENDIX I

ABRIDGED TERMS OF REFERENCE

Scope of Work Output

The main objective of the Working Group is to examine capital contribution issues highlighted above and develop proposals for the RIC's consideration. In undertaking the review, consideration should be given to the following specific matters:

- a clear definition of the point of connection;
- sharing of assets and its applicability to the capital contribution determination;
- available avenues for funding connection works;
- the issue of asset ownership and its impact on present and future costs;
- an appropriate approach for the recognition and valuation of these assets;
- developing an equitable arrangement for allocating the cost of new customer connections; and
- any other relevant issue(s).

The RIC's approach to developing capital contribution proposals is to:

- review the current capital contribution arrangements and consider the extent to which these arrangements are appropriate;
- examine capital contribution arrangements in other utility sectors and in other jurisdictions for relevance and applicability to T&TEC; and
- seek input from customers and customer representative groups and other key bodies.

The RIC considers that the development of capital contribution proposals to apply to electricity transmission and distribution sector should:

- reflect customer's key concerns;
- account for and seek consistency with capital contribution arrangements that apply in other utilities and other jurisdictions;
- ensure that the cost of implementing such arrangements do not outweigh any potential benefit to customers; and
- be transparent.

CAPITAL CONTRIBUTION WORKING GROUP

Mrs. Hazel Brown	-Representative - Non Government Organisations (Chairman)
Mr. Hayden Blades	-Representative - Chamber of Industry and Commerce (Alternate Chairman)
Mr. Brian Moore	-Representative - Trinidad and Tobago Bureau of Standards
Ms. Hema Sharma	-Representative - Ministry of Legal Affairs – Consumer Affairs Division
Ms. Lisa McNicolls Sargeant	-Representative - Trinidad and Tobago Electricity Commission
Ms. Carol Balkaran	-Representative - Regulated Industries Commission
Mr. Daramdeo Maharaj	-Representative - Regulated Industries Commission
Mr. Shameel Khan	-Representative - Regulated Industries Commission
Mr. Connel Mottley	-Representative - Regulated Industries Commission

APPENDIX II

PRACTICE IN OTHER JURISDICTIONS

Ofgem – The Office of Gas and Electricity Markets (England, Wales and Scotland)

Connection charging for the electricity distribution systems applies to both load (demand) customers and generation[1]. Initially the connection charging regimes differed for these two groups. However, both charging regimes are now increasing similar, and the long-term goal is to have them fully aligned. The longer term charging framework is still being developed[2]. However, the interim arrangements (effective April 1, 2005) are outlined below:

- Distributed Generators no longer face deep connection charges. There will instead be shallower arrangements that are similar to those faced by demand customers.
- The connection charge will include the "shallow" element of connection costs and a contribution to reinforcement based on a reinforcement contribution rule. For Extra High Voltage customers the reinforcement may be annualized. The rule is based upon the proportion of the increased capacity required by the connectee.
- Network reinforcement costs resulting from distributed generation connections and not captured by the shallowish connection charges will be recovered through a simple use of system capacity-based charge.

[1] The Generation referred to here is Distributed or embedded generation (primarily small generators powered by renewable fuel sources).
[2] See Ofgem's "Structure of electricity distribution charges: update on progress and next steps", dated, April 3, 2007

Network Tasman Ltd (New Zealand)

Network Tasman notes that as a general principle it will pay for new and upgraded high voltage and low voltage power lines/cables and the supply and installation of transformers as necessary on the shared network above the linkage point. However, this does not apply in certain cases:

- **Large Electricity Users -** Users whose developments fall into this category are required to share, on a proportionate basis, the cost of providing the new assets required. The developers or new consumers' share of development costs above the linkage point will be determined by Network Tasman based on the user's expected future electricity use and the cost of providing the new powerline services.
- **Rural electricity users** - the user is required to
  - Engage and pay an approved contractor all the costs of providing the proposed line extension and vest this with Network Tasman; and
  - Also pay Network Tasman a one-off customer contribution that reflects the relative remoteness of the site and the cost of supplying lines services from a distant main substation or GXP.
  - Subdivisions: Developers or subdivisions falling into this category are required to fund and arrange the entire electrical reticulation except that Network Tasman will provide transformer (subject to certain conditions) and necessary 11kV switchgear ex-stock.
- Where subdivisions are to be vested with Network Tasman, the latter will contribute to the cost of approved high voltage power cable (>400V), the transformer and its installation within augmentation areas. The subdivision must be larger than five lots suitable for new electrical installations and have an average lot area less 2000m. The developer, in all instances, will

fund the installation and connection of low voltage cables, service boxes, streetlights etc., beyond the transformer.

- Where other consumers share a new or existing substation, Network Tasman will meet the cost of providing and installing a substation/transformer. Where a new user requires sole use of the substation then the customer will have to meet the installation or alteration costs. In either category Network Tasman will provide the transformer if the new supply can be supplied from an existing substation within regulatory voltage standards using readily available cable. Network will make no contribution to any additional transformer and /or substation site.
- Finally, customer contribution is required for new supply or additional capacity further than 7km from the nearest GXP or Zone substation. The maximum contribution for a Group 0 or 1 customer is $2000.

Ergon Energy Corporation (Australia)

Ergon Energy states that where a customer/developer connection triggers the requirement for it to carry out works on the shared network (i.e. the network shared by all customers upstream of the new customer/subdivision) or bring forward the shared network works within the Planning Horizon – then the new customer/developer is required to fund all or a share, of the cost of these works.

The planning Horizon for Ergon Energy's future works is:

- Distribution Networks (up to 11/22 kV) – 5 years.
- Zone Substations & Sub-Transmission Networks – 10 years.

Generally the principles are:

1. If the shared network works are outside the Planning Horizon, then the customer/developer is required to fully fund the costs of the works.
2. If the shared network works are within the Planning Horizon, then the customer will be required to pay the cost of advancement of the works.

3. If the shared networks works, or advancement costs, result in a benefit to other customers, then the new customer/developer will be required to pay only its share of the costs. Where costs are to be shared, Ergon Energy will determine at its absolute discretion, the cost shares proportional to the benefit derived by each party.

The Capital Contribution payments are required for uneconomic connections where the customer will pay "standard" franchise tariffs or "standard" customer network charges and as such there would be a future revenue shortfall. The actual Capital Contribution for customers is calculated as follows:

$$CC = IC_{cs} - [IR_{(n=20)} - SNC_{(X\%)}]$$

Where:

CC	=	Capital Contribution
ICcs	=	Incremental Costs (Customer Specific Portion of Project Cost)
$IR_{(n=20)}$	=	Incremental Revenue (present value of a 20 year revenue stream directly attributable to the new connection (calculated on the annual Network Price Book rates)
$SNC_{(X\%)}$	=	Shared Network Cost (a 25,80,or 20% attribution of Incremental Revenue ($IR_{(n=20)}$ to the costs of the existing shared network)

There is a preference for "shallowish" connection charging, except under clearly defined circumstances where "deep" connection charging obtains.