

Approach to Assessing Capital Expenditure for Price Reviews

January
2018

This document examines approaches to assessing capital expenditure (Capex) in general and what has been specifically employed by the RIC for the Trinidad & Tobago Electricity Commission. It also reviews T&TEC's out-turn Capex for the period 2006 to 2016 and presents recommended measures for the treatment of Capex.

Consultative
Document

TABLE OF CONTENTS

1.0	Overview	3
1.1	Purpose of the Document	3
1.2	Responding to this Document	4
2.0	Context.....	5
3.0	Approaches to Capex Assessment.....	7
3.1	RIC’s Approach to Capex Assessment	9
4.0	Review of Out-turn Capex.....	11
4.1	First Regulatory Control Period (June 01, 2006, to May 31, 2011)	11
4.2	Lag Period (2011-2016)	14
5.0	Considerations and Recommended Measures in the Treatment of Capex (Post review of out-turn Capex).....	16
6.0	Conclusion	22

1.0 Overview

The Regulated Industries Commission (RIC) is responsible for setting price controls for the electricity sector and does so within a regulatory framework that is governed by the Regulated Industries Commission Act No. 26, 1998 (RIC Act). This framework provides for the review of the principles for determining rates and charges for services, every five years. In this regard, the RIC is undertaking its second Price Review for the Trinidad and Tobago Electricity Commission (T&TEC) for the control period 2018-2023. This exercise follows a seven year window after the RIC's first review for T&TEC for which the control period was June 01, 2006, to May 31, 2011.

A key element for the RIC in the review exercise is to assess the capital expenditure (Capex) forecast costs of new assets that are required by T&TEC during the regulatory control period for the efficient operation of the network and for service delivery. The regulator's decision vis-à-vis the appropriate level of Capex to be allowed into the rate base or Regulatory Asset Base (RAB) is critical because capital related costs account for a very significant portion of the expenses incurred by the utility and can have notable impact on the final prices paid by customers¹. The overall aim of the assessment of Capex is to ensure that reasonable costs are passed on to customers and, at the same time, to provide for a sustainable revenue stream for the utility/service provider that does not reflect inefficient expenditure.

1.1 Purpose of the Document

This paper examines the approaches to assessing Capex in general and what approaches have been specifically employed by the RIC. It also examines T&TEC's out-turn² Capex to the RIC's approved Capex for the first regulatory control period 2006-2011 and the capital expenditure of T&TEC subsequently undertaken within the period 2011 to 2016. It also

¹ The RIC utilizes a building block approach to establish the revenue requirement for a service provider. Capital costs are recovered through a return on capital and a return of capital (depreciation). To estimate both of these costs the regulator must first establish a Regulatory Asset Base, that is, the investment base or rate base. Both the past level of Capex as well as the forward looking Capex forecast affects the rate base.

²The actual amounts, results at the end of a period of activity, rather than those that were expected or calculated earlier

discusses the proposed approach/measures to assessing Capex for the regulatory period 2018-2023 for T&TEC.

1.2 Responding to this Document

In keeping with the RIC's obligation to consult, stakeholders are invited to comment on this document. All persons wishing to comment are invited to submit their comments. Responses should be sent by post, fax or e-mail to:

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All responses will normally be published on the RIC's website unless there are good reasons why they must remain confidential. Any requests for confidentiality must be indicated. A copy of this document is available from the RIC's website at www.ric.org.tt.

Deadline for submission of comments is January 31, 2018.

2.0 Context

The RIC was established by the RIC Act, Chapter 54:73 of the Laws of Trinidad and Tobago, as such, its functions, powers and duties are derived directly from its legislation. Moreover, the RIC Act defines the parameters of all aspects of the RIC's operation and prescribes the broad approaches that may be considered with regard to the regulation of the utility sectors.

With respect to Capex assessment, the RIC is guided by the following overall objectives contained in the RIC Act:

- Section (6)(1)(c), “to ensure as far as is reasonably practicable, that the service provided by a service provider operating under prudent and efficient management will be on terms that will allow the service provider to earn sufficient return to finance necessary investment”.
- Section 6(1)(d), “to carry out studies of efficiency and economy of operation and of performance by service providers and publish the results thereof”.
- Section 6(3)(a), to consider “maximum efficiency in the use and allocation of resources to ensure as far as is reasonably practicable, that services are reliable and provided at the lowest possible cost”.

The RIC Act also states, in Section (67)(3)(c), that the RIC shall have regard to the ability of consumers to pay rates. It further states in Section (67)(4)(a), (b), (c) and (d) respectively that the RIC shall have regard to the replacement capital cost expended, least-cost operating expenses (Opex) which may be incurred, annual depreciation, and return on the rate base. Working within this legal framework, the RIC applies the building block approach in the determination of the overall expected revenue requirements. The two main components of expenditure enter the revenue requirement differently; Opex results in an immediate change in the allowed revenue of the firm, while the efficient Capex does not directly impact the allowed revenue of the service provider. Efficient (approved) Capex enters the revenue requirement of service providers indirectly through the return on capital, which enables the recovery of costs related to the providers of equity and debt and through the return of capital or depreciation.

More specifically, past Capex is included in the starting RAB and the forecast Capex is added to the annual RAB in the forthcoming control period.

The components or “building blocks” are generally factored in the following equation:

$$Rev = (WACC \times RAB) + Dep + Opex$$

Where:

- *Rev is the allowed revenue requirement*
- *Dep is regulatory depreciation*
- *Opex is the forecast efficient operating expenditure*
- *RAB is the regulatory asset base*
- *WACC is the weighted average cost of capital*
- *WACC × RAB establishes the return on capital allowed over the same period.*

The opening RAB, typically carried forward from the previous period, is a key input and determinant in the allowance for a return on assets and the allowance for a return of assets (depreciation). Overall, the RIC’s aim in assessing the service provider’s Capex to be included in the revenue requirement is to ensure that the proposed investments to be funded within the price limits are necessary, efficient and support the overall objectives outlined in the RIC Act.

3.0 Approaches to Capex Assessment

As stated before, with the Capex assessment, the regulator seeks to determine whether the proposed Capex reflects the efficient costs that a prudent service provider would incur in meeting the demand for its services. The assessment can essentially result in the regulator's acceptance, adjustment or even disallowance of the service provider's proposals for capital expenditure³.

The assessment of Capex starts with the proposed Capex of the service provider and involves some amount of testing of efficiency, prudence and used and usefulness. These tests are defined as follows:

- i. **Efficiency Tests** – which determine whether the proposed Capex was representative of the best way to meet customers' needs for services.
- ii. **Prudence Tests** – which seek to establish whether or not the decision to invest is prudent, given the particular and specific circumstances at the time.
- iii. **“Used and Useful” Tests** – which essentially examine whether or not the particular assets/equipment/plant to be installed is utilised in and contribute to, the provision of the particular service within the regulatory control period.

The tests are generally applied under various analytical tools and methods utilized by regulators in the assessment of Capex. The tools/ methods include the following:

- Regulatory Testing of Past Capex – Comparison of allowed capex to out-turn expenditure in prior period.
- Bottom-up analyses – detailed examination and reassessment of particular investment projects plans.
- Top down analyses – high level review of strategic plan and methodology used to determine capex forecasts.

³While the aim of the assessment of proposed Capex by the regulator is basically the same in all jurisdictions, approaches to Capex assessment have varied by regulators in different jurisdictions. The variation is often in the intensity of regulatory scrutiny and is guided by the specifics of the operating environment, as what is feasible may vary by region and over time.

- A variety of analytical tools developed by the regulator are utilized to address particular issues of importance arising in each determination. These include:
 - Unit cost analyses
 - Output measure analyses
 - External benchmarking analysis
 - Statistical models

Combinations of these tools have been used by regulators to assess the efficiency, prudence and “used and usefulness” of Capex. For example, unit cost benchmarking would help in assessing the business efficiency in building infrastructure, but it would not help with the other drivers of Capex which would have to be assessed on other grounds for prudence and efficiency.

Basically all standard forms of incentive based regulation set an ex-ante⁴ allowance for Capex as part of calculating the price limits. The broadly standardised approach is to review the service provider’s submitted business plan, primarily through a combination of both top down and bottom up analyses. The use of analytical tools and methods discussed above has also been widely used in response to particular matters that arise in the context of specific price reviews. While statistical tests have been used in Capex assessment, there is no evidence of regulators successfully making use of statistical tools, models, or other analytical methods as a substitute for exercising appropriate judgement as to the reasonableness of cost forecasts. An adjustment for achievable efficiencies is often applied, generally via benchmarking. Additionally, consumers are given the opportunity to comment on the service provider’s proposed Capex and the regulator’s treatment of same.

⁴ Evaluation of economic values which are made in advance of future events or uncertainties.

3.1 RIC's Approach to Capex Assessment

The RIC engages in the careful and thorough assessment of the service provider's proposed capital programme, to ensure that the approved Capex is prudent and that the programme consists of projects that are necessary to deliver a satisfactory and adequate level of service, at the most efficient cost. As part of its approach, the RIC performs an assessment of the out-turn Capex of the previous regulatory period in order to judge the likely efficiency of forecast Capex for the forthcoming regulatory period. The RIC uses a combination of top down and bottom up analyses alongside other analytical tools to assess the Capex forecast of the service provider⁵. Broadly the assessment involves evaluating whether past and forecast capex represent the best way of meeting customer's needs for electricity services:

- Review of the out-turn Capex of the previous control period (ex-post assessment⁶) to assess whether in the circumstances existing at the time, T&TEC's past decisions regarding capex investments were prudent and efficient and consistent with RIC approved projects. This assessment determines the prudent and efficient level of Capex that would be included in the opening value of the RAB, at the start of the next regulatory control period.
- Review of the forecast Capex for the subsequent (future) regulatory control period to establish the efficient and necessary level of Capex that will be required for the provision of services. This Capex is included when the RAB is rolled forward, thereby establishing the values of the RAB for each year of the regulatory control period.

The key undertakings in the RIC's assessment of the service provider's Capex submission under the rate review process are as follows:

- **Information gathering** - Discussions/correspondence with T&TEC so that the necessary and complete information is provided to undertake the assessment. The RIC requires from T&TEC a fully supported business plan for the control period along with detailed capital

⁵An expert consultant was utilized for this assessment during the RIC's first price review for T&TEC, however, the RIC will rely on its internal capability for the assessment for the forthcoming control period.

⁶ A look at results and events after they have occurred

expenditure programme documentation by area (transmission, distribution) and cost category (replacement, growth, enhancement and other) incorporating:

- Project background/rationale.
- Project drivers.
- Project cost.
- **Top-down analysis** - Assessing T&TEC's Capex to ensure that there is alignment of the proposed Capex with strategic business drivers such as strategic plans, customer service standards and compliance requirements.
- **Bottom-up analysis** - Evaluating the capital programme to ensure cost effectiveness and that it incorporates project prioritisation (based on needs in critical areas of customer service) including prioritisation across programmes of work, and the consideration of the timing of projects and T&TEC's ability to deliver the capital programme within the regulatory period
- **Efficiency Incentive** - Providing a financial incentive to T&TEC through the adoption of an efficiency carryover mechanism. The primary purpose of a carryover mechanism is to make the incentive continuous (or time independent). This will allow T&TEC to retain savings for a fixed length of time or a fixed percentage of the underspend regardless of when it occurs.
- **Capex Monitoring** – Monitoring by the RIC that requires quarterly and annual reporting by T&TEC on its capital expenditures.

Overall the RIC's approach to Capex assessment is in keeping with established regulatory practice. The RIC considers its approach to be sufficiently robust and believes the review of T&TEC's out-turn Capex performance as part of its assessment and the provision financial incentives and Capex monitoring throughout the regulatory control period will allow for continuous improvement in the RIC's assessment and also in T&TEC's delivery of the approved Capex programme.

4.0 Review of Out-turn Capex

4.1 First Regulatory Control Period (June 01, 2006, to May 31, 2011)

The main objectives in the review of T&TEC's out-turn Capex, for the regulatory control period June 01, 2006, to May 31, 2011, are to assess whether the out-turn Capex was prudent and the extent of the benefits derived from the RIC approved capital works which were executed by T&TEC. Therefore, the RIC will examine the out-turn expenditure with the allowed expenditure and discuss the differences between both.

In total T&TEC spent approximately \$1.9 billion for capital works/projects over the period of which, \$738 million was spent on Government's Public Sector Investment Programme (PSIP) that were not to be funded by tariff revenues, rather they were to be financed by the Government. It is noteworthy that of \$738 million spent by T&TEC on PSIP capital works/projects which were to be financed by the Government, only \$33.7 million was provided by the State for these and ring-fenced⁷ projects. The extent of undertakings on Government projects for which funding was neither approved by the RIC, nor fully provided by Government itself, undoubtedly affected T&TEC's ability carry-out its approved Capex programme, particularly between 2006 and 2010 of the regulatory control period.

T&TEC's reported Capex on RIC approved projects for the period exceeded the amount allowed by the RIC for its capital works programme. More specifically, while the RIC approved a total of \$800 million for Capex over the entire control period, June 2006 - May 2011, T&TEC spent \$1.2 billion on these projects for the period, approximately \$405 million over the allowed allocation. It is important to note that while T&TEC spent less than the approved Capex for the each of the first four years of the regulatory control period that was not the case in the fifth year of the five year control period. In fact T&TEC attributed a large sum totalling \$758 million to RIC approved projects when only \$148 million was approved for Capex projects for that year as shown in the **table 1** below.

⁷ Projects that are ring-fenced are not included in the approved capital programme and therefore there is no provision for return on or of capital, for such projects. As a result, the capital related costs of these projects are not included in the revenue requirement and therefore such projects are not meant to be funded through tariff revenues.

Table 1: Comparison of T&TEC's Capex vs RIC Approved 2006 – 2011 (TT\$ Millions)

	2006 - 2007	2007 - 2008	2008 - 2009	2009 - 2010	2010 - 2011	Total 2006 - 2011
Total Capex (Out-turn)	228.00	385.00	268.00	204.00	859.04	1,944.04
Capex on PSIP/Ring fenced Projects (Out-turn)	127.10	250.40	177.80	83.20	100.10	738.60
Capex on RIC Approved Projects (Out- turn)	100.90	134.60	90.20	120.80	758.94*	1,205.44
RIC Approved Capex)	153.20	191.40	169.40	137.80	148.20	800.00
Variance on Allowed Projects (Out-turn vs RIC Approved)	-52.3	-56.8	-79.2	-17.0	610.74	405.44

Note* The RIC has queried this number and is awaiting T&TEC's response.

There has been no rationale presented by T&TEC for exceeding the RIC's Total Capex allocation for the approved list of projects by 50.7%. In practice, increases of actual over forecasted expenditures, may be attributed to a number of reasons including: higher than anticipated prices of materials and or services used in the undertaking or delivery of projects; inappropriate or poor choice of forecasting methodology or inaccurate assumptions, resulting in an under-estimation of expected project costs; or poor implementation of the capital programme. In other instances, utilities have deliberately understated project costs in Capex forecasts, in order to have said projects included in the rate base, with full knowledge that in actuality such costs may be notably higher. Notwithstanding the particular reason(s) for T&TEC's overspending in this regard, it is fair to assume that in an attempt to undertake both Government-directed and RIC-approved projects, notable competition for resources (financial and otherwise) may have resulted, which in turn could have led to a number of RIC-approved projects not being completed, and in other instances, not being started.

T&TEC was not able to complete many of the projects that were viewed by the RIC as being of critical importance to service delivery. T&TEC undertook just over 64% (or 69 of 107) of the projects that the RIC had approved for the entire period. Thus 38 capital projects that were

approved were not done. Moreover, in many instances those works which were completed or are still in progress have cost more than the approved or projected amounts. Therefore, T&TEC has not benefitted from the designed incentive carryover mechanism. The details of the number of projects delivered by T&TEC are presented in **table 2** below. Where the service provider can show that avoided Capex is due to efficiencies on its part, it is allowed to retain the revenue associated with the unspent Capex for a period of five years under the rolling retention of efficiency savings, as approved by the RIC. However, the RIC had specified that reduction of volumes of investment would not simply be accepted as efficiency.

Table 2: Completion Status of RIC Approved Projects 2006 - 2011

Category	Sub- Category	No. Approved	No. Completed	No. Incomplete	No. Not Started
<i>Transmission</i>	Substation Rehabilitation	14	5	1	8
	New Substations	16	8	2	6
	Sub-Total	30	13	3	14
<i>Distribution</i>	Network Upgrade	19	0	11	8
	Substation Upgrade	29	11	9	9
	Sub-Total	48	11	20	17
<i>Other Network Related</i>	Sub-Total	4	1	3	0
<i>Non-Network Related</i>	Upgrade of Information Technology Systems	14	10	3	1
	Establishment of Customer Service and	2	1	-	1
	Strengthening of Administrative Services	9	1	3	5
	Sub-Total	25	12	6	7
Grand Total		107	40	29	38

4.2 Lag Period (2011-2016)

The main objectives in the review of T&TEC’s Capex, during the lag period (2011-2016), are to assess whether the out-turn Capex was prudent and the extent of the benefits derived from the capital works which were financed by tariff revenues.

T&TEC’s total capital expenditure over the period January 2011 – December 2016 amounted to approximately \$1.9 billion. Approximately \$1.4 billion (72% of total Capex) was sourced from tariff revenue and \$546.8 million (28% of total Capex) was financed by the Government’s Public Sector Investment Programme (PSIP) and other government funded (ring fenced) projects for the lighting of parks and recreation grounds and other government driven projects see **table 3**. This compared similarly with the period 2006 to 2011, where total capital expenditure also amounted to approximately \$1.9 billion and capital expenditure funded by tariff revenue was approximately \$1.2 billion (72% of total Capex).

Table 3: Breakdown of T&TEC’s Capital Expenditure 2011 - 2016 (TT\$ Millions)

	2011	2012	2013	2014	2015	2016	Total 2011-2016	Total 2006-2011
Tariff Funded	206.33	190.47	254.03	312.15	182.87	281.47	1,427.32	1,205.44
PSIP Funded	66.83	54.04	67.95	104.78	62.32	24.21	380.13	738.60
Ring Fenced	4.76	14.90	21.92	58.99	33.94	32.19	166.70	
Total	277.92	259.41	343.89	475.92	279.13	337.87	1,974.14	1,944.04

The total out-turn Capex over this period (\$1.97billion) was less than T&TEC’s projection of \$2.3 billion (submitted to the RIC in 2010). The approximate number of capital works/ projects (110) identified for the period, see **table 4**, was of similar magnitude to the number of projects (107) approved by the RIC for the regulatory period 2006 – 2011.

Table 4: Details of Tariff Revenue Funded Projects 2011 - 2016 (TT\$ Millions)

Category	No. of Projects*	2011	2012	2013	2014	2015	2016*	Total
Transmission	27	39.05	53.12	77.95	129.15	31.02	81.06	411.35
Distribution	56	154.44	124.80	127.32	149.47	136.62	168.88	861.53
Other-Network Related	5	2.89	4.17	8.98	18.06	4.66	10.70	49.46
Non-Network Related	22	9.95	8.38	39.78	15.47	10.57	20.83	104.98
Total	110	206.33	190.47	254.03	312.15	182.87	281.47	1,427.32

***Amounts have been estimated based on data submitted by T&TEC,**

Annual out-turn capex varied between \$182.87 million in 2015 (minimum) and \$312.15 million in 2014 (maximum) and the out-turn capex under the different investment categories also varied on an annual basis, therefore, there is no indication that T&TEC had attempted to smooth the spending levels over the period.

5.0 Considerations and Recommended Measures in the Treatment of Capex (Post review of out-turn Capex)

The RIC's review of T&TEC's out-turn Capex highlighted the need for further measures to treat with undesirable outcomes such as cost overruns, project delays and lack of project execution. Some of the outcomes arose from the fact that, even with reasonable Capex allowances, T&TEC still faces considerable cost uncertainty as factors in the operating environment are difficult to predict and can easily change. Additionally, there is a need for more robust governance of the capital planning process and a stronger focus on deliverability (including supply chain implications) for capital projects of T&TEC. Further, challenges have arisen as a result of the governance arrangements for T&TEC due to state ownership. To address specific issues arising out of these current circumstances, the following considerations and recommended measures are proposed to facilitate and achieve efficiency and prudence throughout all stages from the planning to the execution of T&TEC's capital expenditure programme for the subsequent regulatory control period.

- **Use of Tariff Revenues for Government Driven (Non-approved) Projects**

The extent of spending on Government driven projects for which funding was neither approved by the RIC in the regulatory control period, nor fully provided by Government itself, undoubtedly affected T&TEC's ability to undertake and complete the projects that were in fact approved by the RIC. In this regard, the RIC is putting forward the following proposals to ensure that the use of tariff revenue for purposes other than that outlined in the Final Determination is discontinued, including:

- i. Engaging the Minister to discuss the RIC's concerns and present proposals to address same, seeking the Minister's assurance that said concerns would be addressed.
- ii. Requiring the Board of T&TEC to provide self-certification assurances, in writing, for items such as the "Use of Tariff Revenues", that will provide a documented commitment of T&TEC's Board to fulfil certain regulatory mandates and desist from particular actions, not approved by the RIC.

- **Under and Over-spend on (RIC approved) Capex Projects and Incomplete (RIC approved) Projects**

T&TEC's total spending on the RIC's approved projects in the control period, June 2006 – May 2011 was higher than the approved amounts, yet there were many projects that were incomplete (and/or over budget) and others that did not begin at the end of the regulatory control period. Therefore, there must be some strategy or mechanism(s) employed to account for under and over spend on projects, projects not undertaken and those that were not completed.

With respect to **under-spends** on Capex, this can arise when expenditure is less than the approved amounts, due to efficiencies or if a project is not undertaken. The possibilities for adjustment of the RAB are as follows:

- i. Where approved projects **are not undertaken**, excess returns can be clawed-back⁸ at the end of the regulatory period.
- ii. Where approved projects **are undertaken** and the associated expenditure is less than the approved amount, the RAB can be adjusted downward at the end of the period. T&TEC will benefit from the savings during the period and customers would benefit from a lower than anticipated increase at the beginning of the new control period when the RAB is adjusted.
- iii. Where approved projects **are undertaken** and the associated expenditure is less than the approved amount, the anticipated expenditure is retained in the RAB with no adjustment for actual spending. This option provides strong efficiency incentives, as utilities would benefit from earning return on the forecast rather than the actual RAB, thus providing an incentive for utilities to reduce their actual spending on the approved capital programme. However, in such a case there is also a strong incentive for inflated Capex projections to be presented.

With respect to **over-spends** on approved Capex, as a result of cost overruns. The possibilities for adjustment of the RAB are as follows:

⁸ Claw back results in downward adjustment of the revenue requirement for the subsequent regulatory period.

- i. Where overspends are determined to be inefficient, the associated excess spend may not be allowed in the RAB, so consumers will not have to fund that expenditure into the next period.
- ii. Where overspends are determined to be efficient the associated excess spend will be allowed in the RAB.

For the first regulatory period, the RIC decided to include the efficiently incurred Capex only. This principle will again be applied to those projects that are completed in the forthcoming regulatory control period. However, T&TEC's lack of execution of the approved capital programme had resulted in 38 projects not being undertaken. The RIC's allocation for those projects was \$170.1 million, thereby resulting in excess returns (on capital) provided via the revenue requirement of about \$13.6 million, which must be treated with. This is tantamount to an over-recovery of revenues. In this regard, the RIC is now considering three options:

- i. Adjusting the revenue requirement for the forthcoming regulatory period, this is in fact, the normal practice of regulators. However such an approach may signal to customers that the cost of delivering service to them has decreased, which is not indicative of the reality, in this case.
- ii. Providing cash rebates to customers to account for the excess returns provided. This option would send strong signals to T&TEC about the importance the RIC places on the completion of priority projects, and the consequences of not undertaking them.
- iii. Identifying specific projects that the amount (the excess returns) would be spent on in order to improve services. However, this would introduce issues relating to appropriate project selection, as any project selected would have to be such that there is no perceived bias in terms of the beneficiaries thereof.

In a few instances, T&TEC made changes to the approved capital programme by substituting approved projects with others, on the basis that the new projects achieved better outcomes than the originally approved ones. The RIC's view on investment funds provided ex ante, for projects which in actuality, have been cancelled or delayed, is that the service provider should retain the revenue associated with such projects, provided that the decision was based on sound reasoning,

and that the overall outcome of such a decision, is beneficial to customers. This is consistent with good regulatory practice, as is evidenced by the 1997 determination by the Monopolies and Mergers Commission (MMC), in the United Kingdom, concerning Northern Ireland Electricity. The final ruling stated, “in cases where improved demand management, equipment utilization or alternative solutions had been adopted, the company should be allowed to keep the revenues associated with the investment”. Thus such a decision by the RIC would be appropriate where the utility’s delay or cancellation of projects is prudent and results in more efficient outcomes than if the projects were executed as originally planned. With respect to incomplete projects the RIC will allow the completion of those projects and will make the required adjustments to the RAB only upon the completion of those projects

- **The Capex Incentive Mechanism**

Government or State-owned utilities often do not respond to financial incentives as private firms, which generally seek to maximise their revenue. This may be largely due to how the Government perceives and executes its ownership function, and the type of financial support/arrangements provided. If a State-owned utility were operated as a commercial enterprise, where its viability depended on its ability to recover costs and improve efficiency, it would respond more favourably to efficiency incentive mechanisms. The RIC intends to revisit the issue of the efficacy of incentive mechanisms when applied to State-owned utilities, but favours the use of some tool to incentivise utilities, whether via efficiency carryover or other types of incentives mechanisms. Such mechanisms would include:

- i. **Capex Triggers** – When charges have been set for a control period, a guaranteed level of revenues is allowed based on projected levels of Capex and as such, there may be an incentive for the service provider to delay the investment. A Capex trigger can address this issue by making allowances in charges conditional on the achievement of certain project milestones. Triggers can be positive or negative; thereby either increasing or decreasing revenues if an event occurs. The use of triggers would be most suitable for large, clearly identifiable projects. Capex triggers can be complex to design and deciding the proportion of revenue that should be at risk for not meeting the target or project milestone is also not straight forward.

- **Contingency Margins in the Capex forecast**

When forecasting the cost of capital projects the RIC can include an allowance for contingency to provide a buffer against overruns relative to the overall capex forecast. This can cover projects that are determined to be reasonably necessary, but which are excluded from the ex-ante allowance in the revenue requirement, on the basis of uncertainty of the projects themselves or of their costs. The provision is exercised only in the event that such contingent projects are actually undertaken, in which case, the service provider will be allowed the revenue, with the regulator's approval. The cost of such contingent projects should exceed some minimum or threshold amount, such as a given percentage of the allowed revenue. This mechanism is appropriate for large scale projects. T&TEC's AMI (Advanced Metering Infrastructure) project is one example of a project that was excluded ex-ante from the revenue requirement, but which may have been suitable for use of such funds from the contingency margins in the Capex forecast.

- **Capex Reporting Framework**

The RIC is of the view that monitoring of and reporting on projects, is critical to ensure the successful execution of T&TEC's capital programme. As a result the following measures are being proposed to strengthen the RIC's monitoring regime:

- i. Modifying the existing reporting framework in which T&TEC is required to submit Capex reports to a format suitable for public release by predetermined dates. Thus it places the onus on T&TEC to prepare the reports. In addition, by making the report public, the RIC hopes that T&TEC will be motivated to more conscientiously undertake and complete the approved capital programme. Specifically, this will include:
 - Bi-annual reporting (every six months) on the status of projects; and
 - Providing detailed data on each project annually.
- ii. Establishing fixed dates by which T&TEC must meet and achieve certain Capex related Directives, and holding T&TEC to account for instances where such deadlines are not met.

- iii. Conducting a mid-term review of Capex.
- iv. Implementation of a Capital Expenditure Safety Net – this allows for the review of the Capex allowance where the Capex in any given year of the control period, is in excess of 15% - 20% below the allowed Capex for said year.
- v. Employment of the Public Disclosure of Non-Compliance and Public Register notices on the RIC's website. Through these notices, the RIC will publish, without hesitation, when and how T&TEC has not complied with any targets set for its achievement.

- **Other Issues**

In order to improve the quality of Capex submissions and Capex execution, and in a more general way, treat with the other issues that have arisen in the past control period and the lag period, or may arise in future, relating to T&TEC's execution of the approved, capital programme, the RIC suggests:

- The use of a self-assurance process, the details of which must be submitted by T&TEC to the RIC, in which there is an assurance by T&TEC's Board that Capex projections accurately reflect the underlying information base. This is an internal process which does not necessarily entail external scrutiny or assurance.
- The engagement of Government to implement a Management Incentive Plan which provides appropriate incentives for senior management to scrutinise and question capex forecasts and project implementation plan e.g. (bonuses for improved capex performance, performance related pay, etc.).
- The development (if not already existent) and submission of detailed Asset Management Plans, alongside longer term capital investment plans, with a view to assess how T&TEC's proposed Capex relates to, and corresponds with, same.
- The establishment of a Stakeholder Monitoring Group to oversee the implementation and delivery of the approved Capex plan against T&TEC's out-turn.
- The continuation of detailed ex-post efficiency reviews of T&TEC's performance with respect to capital expenditures.

- Through its assessment of out-turn Capex undertaken outside of a regulatory control period, the RIC will allow only prudent and efficient expenditure into the RAB for T&TEC.

6.0 Conclusion

The capital programme that is approved by the regulator is an important consideration in the price setting process as it significantly impacts on the final rates paid by customers. In this context, the need for the regulator to adopt robust approaches to scrutinising, incentivising and (where necessary) adjusting capital investment allowances is paramount.

Moreover, the RIC is mandated by its guiding legislation to ensure that the service provider that operates under prudent and efficient management will earn sufficient revenue to finance necessary investment. As such, the RIC must endeavour to ensure that the approved capital programme is one that is undertaken at efficient costs and in an efficient manner and at the same time, provide the revenues that will allow for such. Consequently, the RIC has proposed not only an approach to interrogate T&TEC's forecast Capex to ensure that allowed projects are efficient but also has implemented measures to that ensure that there are adequate mechanisms in place to incentivise the utility to carry out the approved Capex programme and monitor its execution of same.

The RIC invites comments and views on all the ideas and proposals presented in this paper.