

Approach to Assessing Capital Expenditure for Price Reviews

**May
2021**

This document examines approaches to assessing capital expenditure (Capex) in general, and the approach specifically employed by the RIC for the first regulatory control period (2006-2011) for the Trinidad & Tobago Electricity Commission. It also reviews T&TEC's out-turn Capex for the period 2006-2019 and presents measures for the treatment of Capex for the second regulatory control period (2021-2026).

**Consultative
Document**

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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 (RIC Act), Chapter 54:73 of the Laws of Trinidad and Tobago. This framework provides for the review of the principles for determining rates and charges for regulated 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 2021-2026 (PRE2). This exercise follows a ten-year lag after the RIC's first Price Review for T&TEC for the control period June 01, 2006, to May 31, 2011 (PRE1).

A key Price Review activity is the assessment of T&TEC's forecast of capital expenditure (Capex) for the regulatory control period. Capital expenditures are undertaken by T&TEC to acquire and maintain assets and to upgrade/expand the electricity network, to maintain and/or improve service levels to customers over the regulatory control period. 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, that do not reflect inefficient expenditure, are passed on to customers through rates. The RIC is mandated to ensure that the rates which it sets are on terms that provide a sustainable revenue stream for the utility/service provider.

There are a number of tools and methods used by regulators to assess the capital expenditure of a utility, including regulatory testing, bottom-up approach, top-down approach and benchmarking. The RIC used a combination of these methods in its assessment of Capex for PRE1 and proposes to maintain this approach for PRE2. Furthermore, based on the results of the RIC's assessment of T&TEC's performance during PRE1 and subsequent years, additional measures have been proposed to ensure T&TEC's full execution of the approved capital programme in PRE2.

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 upon which the service provider is permitted to earn a reasonable return. Both the past level of Capex as well as the forward looking Capex forecast affect the rate base.

1.1 Purpose of the Document

This paper examines the approaches to assessing Capex in general, and the specific approaches employed by the RIC for PRE1. It also examines T&TEC's out-turn² Capex against the RIC's approved Capex for the first regulatory control period, as well as the out-turn Capex for the subsequent years 2011 to 2019. The RIC's proposed approach for assessing T&TEC's Capex forecast for PRE2 is also discussed. Finally, measures to ensure T&TEC's prudent spending of tariff revenue on capital projects for PRE2 are presented.

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 responses, in writing, by **4:00 p.m. on June 7, 2021** to:

Executive Director
Regulated Industries Commission
#37 Wrightson Road
Port-of-Spain, Trinidad

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Tel. : 1(868) 625-5384; 627-7820; 627-0821; 627-0503
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Email : ricconsultation@ric.org.tt
Website : www.ric.org.tt

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.

²The actual amount expended at the end of a period of activity, rather than the amount that was expected or forecasted earlier.

2.0 Introduction

The RIC was established by the RIC Act, Chapter 54:73 of the Laws of Trinidad and Tobago. Its functions, powers and duties, which include price setting, are derived directly from its parent legislation. The RIC is required to set price limits that allow an efficiently operated utility to deliver safe and reliable service at affordable prices over the regulatory control period. Prices must also allow the utility to earn sufficient revenues to recover its costs and provide a reasonable return on investment. The assessment of the utility's costs by the RIC is crucial to ensure that only efficient costs are included in the determination of retail rates for customers.

A significant portion of the retail price of electricity is allocated to cover the costs of investment in equipment used to generate³, transmit and distribute electricity to the customer. Capex for an electricity transmission and distribution utility, such as T&TEC, includes spending for new assets that increase network capacity, reinvestment in existing assets that are approaching the end of their serviceable life, and spending on other support assets, such as information technology and motor vehicles. The remaining portion of the retail price is allocated to cover operating expenditures (Opex)⁴.

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”; and

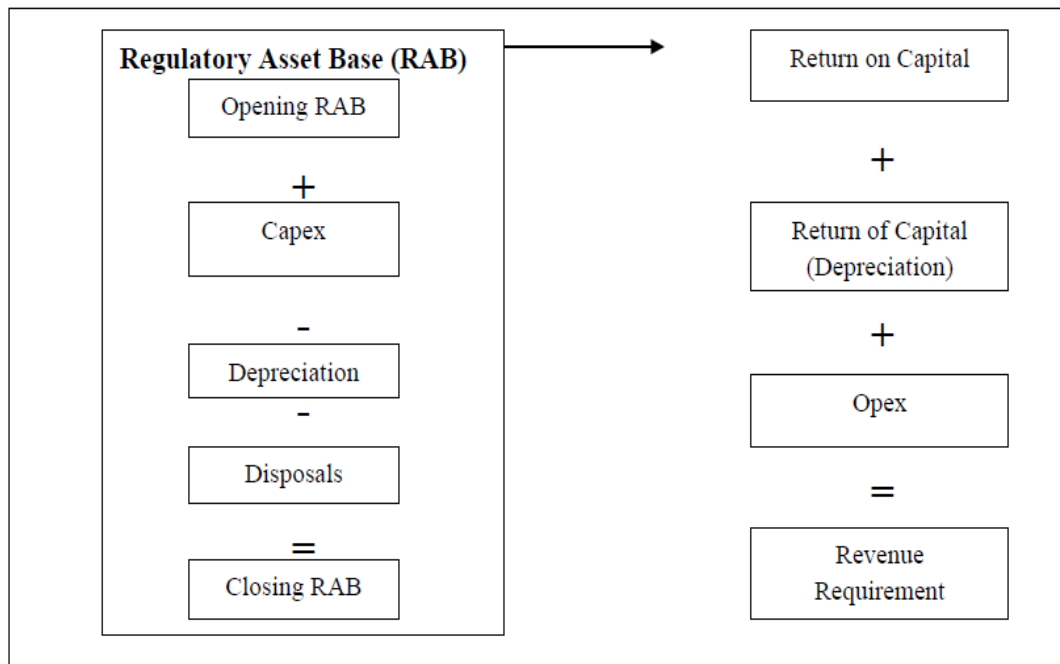
³ In Trinidad and Tobago there are three Independent Power Producers (IPPs) that are contracted to supply electricity to T&TEC, which is solely responsible for transmission and distribution to customers. The IPPs generate the majority of electricity used by customers of T&TEC, however, T&TEC owns and operates some electricity generation equipment in Tobago.

⁴ The RIC discusses its “Approach to Setting Opex” in a separate consultative document.

- 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”.

In Section (67)(3)(c) of the Act, the RIC is required to have regard to the ability of consumers to pay rates. Further, Section (67)(4)(a), (b), (c) and (d) mandates that the RIC have regard to replacement capital cost expended, least-cost operating expenditure (Opex) which may be incurred, annual depreciation, and return on the rate base. The RIC is therefore, required to assess the utility’s forecasted Capex, to determine the approved/allowed Capex for the forthcoming regulatory control period. This approved/allowed Capex is a key input into the determination of the overall expected revenue requirement for the utility, which is the amount of revenue that the RIC establishes as sufficient to cover the utility’s approved costs. The RIC utilises the building block approach⁵ to derive the utility’s revenue requirement, as shown in figure 1 below.

Figure 1 – Building-block Approach to Revenue Requirement



⁵ The building block approach is explained in the RIC’s consultative paper “Framework and Approach for the Price Review for the Electricity Transmission and Distribution Sector (T&TEC) 2021-2026 Regulatory Control Period”. This document can be viewed on the RIC’s website at www.ric.org.tt.

Figure 1 shows that the two main components of expenditure, Opex and Capex, impact the revenue requirement in different ways. Opex results in an immediate change in the allowed revenue of the firm, while Capex enters the revenue requirement indirectly, in two ways. The first is through the return on capital, which enables the recovery of costs related to the providers of equity and debt, and the second is through the return of capital or depreciation. More specifically, past Capex is included in the opening regulatory asset base (RAB) and approved forecasted Capex is added to the RAB in the forthcoming control period.

Overall, the RIC's aim in assessing the service provider's Capex 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 General Approaches to Capex Assessment

Capex assessment is undertaken to determine if the Capex proposed by the service provider, for the regulatory control period, reflects the efficient costs that a prudent service provider would incur to meet the demand for its services. The assessment can essentially result in the regulator's acceptance, adjustment or disallowance of the service provider's proposals for Capex⁶.

The assessment starts with an examination of the proposed Capex of the service provider through the use of various tests of efficiency, prudence and "used and useful". These tests are defined as follows:

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

The tests are generally applied by regulators utilizing various analytical tools and methods which include the following:

- Regulatory scrutiny of past Capex – comparison of allowed Capex to the utility's out-turn expenditure in the prior period;
- Bottom-up analyses – analysis, based on technical judgment, to determine the specific actions (e.g. investments and/or expenditures) that would be required for the utility to perform at a pre-determined level;
- Top-down analyses – high level review of the utility's strategic plan and methodology employed to determine its Capex forecasts; and
- Analytical tools developed by regulators are utilized to address particular issues of importance that arise in each determination. These include:

⁶ The aim of the assessment of proposed Capex by the regulator is basically the same in all jurisdictions, however, 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.

- Unit cost analyses;
- Output measure analyses;
- External benchmarking analysis; and
- Statistical modelling.

These tools have been used by regulators in varying combinations, 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 does not help with determining the extent to which this infrastructure impacts on output of the business. Hence, the suitability of a test is dependent on the driver of Capex which is to be assessed.

Incentive based regulation typically sets an ex-ante⁷ allowance for Capex as part of its determination of the price limits. The broadly standardised approach is to review the service provider’s business plan, primarily through a combination of top-down and bottom-up analyses. The choice of analytical tools is usually in response to matters that arise during a price review. While statistical tools, models or analytical methods are used in Capex assessment, these should not be considered a substitute for the exercise of appropriate judgement regarding the reasonableness of cost forecasts. Additionally, benchmarking is generally used by regulators to inform adjustments to the service provider’s forecasts, for any achievable efficiencies.

3.1 RIC’s Approach to Capex Assessment and Related Matters

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 Capex programme consists of projects that are necessary to deliver a satisfactory level of service, at the most efficient cost. Ensuring efficient Capex is not only dependent on a robust assessment of the service provider’s proposed Capex by the RIC. Careful and consistent monitoring of the actual expenditure and performance against established efficiency benchmarks, throughout the control period, are also essential to achieve the desired outcome. As part of its approach, the RIC examines the out-turn Capex of the previous regulatory period in order to project the likely efficiency of forecast Capex

⁷ Setting allowances for Capex in advance of when the expenditure on Capex actually occurs.

for the forthcoming regulatory period. The RIC uses a combination of top-down and bottom-up analyses alongside other analytical tools, including benchmarking and unit cost analysis, to assess the Capex proposal of the service provider⁸ as follows :

- Review of the out-turn Capex of the previous control period (ex-post assessment⁹) to assess whether T&TEC's past decisions regarding Capex investments were prudent, 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 forthcoming regulatory control period, to establish the efficient and necessary level of Capex that will be required for the provision of services. The annual RIC approved Capex is added to the opening RAB to establish 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 that are necessary to ensure efficient delivery of Capex throughout the regulatory control period, are as follows:

- **Information gathering** - The RIC requires T&TEC to submit a comprehensive business plan for the forthcoming regulatory control period which should include a proposed Capex programme, with details specific to each functional area (e.g. transmission, distribution) and cost categories (replacement, growth, enhancement and other) incorporating:
 - Project rationale/background, inclusive of benefits
 - Project drivers
 - Project cost

When the business plan is received the RIC ascertains whether the required information has been submitted. If this has not been done the RIC follows this with discussions/correspondence with T&TEC to ensure that the necessary and complete information is provided to the RIC to undertake the Capex assessment.

⁸An expert consultant was utilized for this assessment for PRE1, however, the RIC will utilize its internal expertise to carry out the Capex assessment for PRE2.

⁹ Assessment of events after they have occurred, inclusive of the results/outcomes.

- **Top-down analysis** - Assessment of T&TEC's Capex submission to ensure that there is alignment of the proposed Capex with strategic business drivers such as T&TEC's strategic plan objectives, quality of service standards and compliance requirements.
- **Bottom-up analysis** – Evaluation of the proposed Capex programme to ensure cost effectiveness, project prioritisation (based on the 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** - Provision of a financial incentive to T&TEC through the integration of an efficiency carryover mechanism¹⁰ as part of the overall approach to forecasting and promoting efficient Capex. 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 period or for a fixed percentage of the under-spend, 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 in other jurisdictions. Consumers are also given the opportunity to comment on the service provider's proposed Capex and the regulator's treatment of same through a consultative process. The RIC considers its approach to be sufficiently robust and believes that the review of T&TEC's out-turn Capex, the provision of financial incentives, and Capex monitoring throughout the regulatory control period, will promote continuous improvement in T&TEC's delivery of the approved Capex programme.

¹⁰ The efficiency carryover mechanism provides an incentive for service providers to pursue efficiency improvements in Capex. To encourage a service provider to become more efficient during the control period, it is allowed to keep a portion or all of the difference between its approved forecast and its actual Capex during the control period.

4.0 Review of Out-turn Capex

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

The review of T&TEC's out-turn Capex, assesses T&TEC's compliance with RIC's approved Capex projects, for the regulatory control period June 01, 2006, to May 31, 2011. Accordingly, T&TEC's out-turn Capex is examined against the allowed expenditure and discussed. T&TEC's completion of RIC-approved tariff-funded projects over the period is reviewed below.

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

| | 2006 - 2007 | 2007 – 2008 | 2008 – 2009 | 2009 - 2010 | 2010 - 2011 | Total 2006 – 2011 | Yearly Average |
|---------------------------------------------------------------|-------------------|-------------------|-------------------|-------------------|----------------------|-----------------------|----------------------|
| RIC Approved Capex | 153.2 | 191.4 | 169.4 | 137.8 | 148.2 | 800.00 | 160 |
| (1) <u>Capex Out-turn on RIC Approved Projects</u> | <u>100.9</u> | <u>134.6</u> | <u>90.2</u> | <u>120.8</u> | <u>758.94</u> | <u>1205.44</u> | <u>241.09</u> |
| Variance on Allowed Projects (Out-turn vs RIC Approved) | -52.3 | -56.8 | -79.2 | -17 | 610.74 | 405.44 | |
| (2) <u>Capex Out-turn on PSIP/ring-fenced Projects</u> | <u>127.1</u> | <u>250.4</u> | <u>177.8</u> | <u>83.2</u> | <u>100.1</u> | <u>738.60</u> | <u>147.72</u> |
| (1)+(2) <u>Total Capex Out-turn</u> | <u>228</u> | <u>385</u> | <u>268</u> | <u>204</u> | <u>859.04</u> | <u>1944.04</u> | <u>388.81</u> |

In its Final Determination for Rates and Miscellaneous Charges¹¹, the RIC approved a Capex spend totalling \$800 million for projects that T&TEC proposed to undertake within the regulatory control period, as shown in **table 1** above. T&TEC's reported Capex out-turn on RIC-approved projects for the period was \$1.205 billion, exceeding the amount allowed by the RIC for these

¹¹ Final Determination-Rates and Miscellaneous Charges, Regulation of Electricity Transmission and Distribution June 01, 2006 to May 31, 2011. The document can be viewed from the RIC's website at www.ric.org.tt.

projects by \$405.44 million. T&TEC provided no specific reason for exceeding the RIC's approved Capex allocation for the control period by 50.7%. It is important to note, however, that while T&TEC spent more than the total approved Capex over the entire period, Capex out-turn was less than what was approved by the RIC for each of the first four years of the regulatory control period. In the fifth year, a significant overspend was reported by T&TEC.

It should be noted that in practice, increases of actual over forecasted expenditures may be attributed to a number of reasons. These include higher than anticipated prices of materials and/or services, forecasts or assumptions that result in an under-estimation of expected project costs, or poor management/implementation of the Capex programme. It is also possible that project costs are deliberately understated in Capex forecasts, to improve the odds of the project being included by the regulator in the rate base.

Over the regulatory control period, T&TEC also executed Capex projects that were not approved by the RIC. More specifically, \$738 million was spent on Government's Public Sector Investment Programme (PSIP) projects. These projects were to be financed solely by the Government. It is noteworthy that of the \$738 million spent by T&TEC on PSIP capital works/projects, only \$33.7 million was provided by the State for these and other projects which the RIC had identified should be ring-fenced¹². This is an indication that the shortfall of approximately \$704.3 million was met from other revenue sources.

The extent of undertakings on Government projects by T&TEC for which funding was neither approved by the RIC, nor fully provided by Government itself, undoubtedly affected T&TEC's ability to effectively carry out its approved Capex programme between 2006 and 2010. It is reasonable to assume that in an attempt to undertake both Government-directed and RIC-approved projects, competition for internal resources may have resulted, thus negatively impacting the execution and completion of some RIC-approved projects.

¹² Projects that are ring-fenced are not included in the approved capital programme and therefore there is no provision for return on or return 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.

Over the control period, T&TEC was not able to complete several of the projects that were viewed by the RIC as being of critical importance to service delivery. The details of the number of projects delivered by T&TEC, by investment category,¹³ are presented in **table 2** below. T&TEC started 69 of the 107 projects that the RIC had approved for the period, however, only 40 were completed by the end of the period. Thirty-eight (38) capital projects that were approved for the 2006-2011 regulatory period were not started within the regulatory control period. Since 29 of the 69 projects which were started were not completed by the end of the period, the eventual overspend in Capex was actually larger as additional funding would have been required for the completion of those projects.

The incentive carryover mechanism implemented by the RIC, allows the service provider to retain the revenue associated with any avoided Capex for a period of five years, if the avoided Capex is due to efficiencies by the service provider. The RIC had also specified that any reduction in the volume of investment as a result of undertaking less projects, would not be accepted as efficiency. T&TEC's large overspend in Capex during the control period, therefore, meant that the organisation was not eligible to benefit from the incentive carryover mechanism.

¹³ Capex spend is broken down by category as follows: Transmission, Distribution, Other Network-related and Non-network related. Transmission Capex entails the capital works to rehabilitate and establish new substations and network development at the transmission level; Distribution Capex entails the capital works to rehabilitate and upgrade substations and networks at the distribution level; Other Network Related Capex entails the capital works related to pole replacement programme, voltage correction exercises, new customer connections, upgrading of communication/control systems and substation protection/control systems; Non-network Related Capex entails the capital works related to strengthening administrative services/ facilities/ equipment, upgrading of informational technology systems, and the upgrading and establishment of customer service centres.

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

| Investment 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 | 2 | 9 | 8 |
| | Substation Upgrade | 29 | 12 | 8 | 9 |
| | Sub-Total | 48 | 14 | 17 | 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 Call Centres | 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 (2011-2019)

The main objectives in the review of T&TEC's Capex out-turn, during the lag period (2011-2019) are the interrogation of the quantum of out-turn Capex, the apportionment with respect to tariff-funded versus PSIP/ring-fenced funded Capex and the breakdown of the tariff funded Capex out-turn by the four (4) investment categories utilised for the 2006-2011 regulatory period.

T&TEC's total Capex out-turn over the period January 2011 – December 2019 amounted to approximately \$3.26 billion. As seen in **table 3** below, approximately \$2.2 billion (69% of total Capex out-turn) was sourced from tariff revenue and \$1 billion (31% of total Capex) was financed by PSIP and other government funding (ring-fenced projects) for the lighting of parks and recreation grounds and other government driven projects.

Table 3: Breakdown of T&TEC's Capital Expenditure 2011 - 2019 (TT\$ Millions)

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | Total 2011- 2019 | Yearly Average |
|------------------|---------------|---------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|------------------------|-------------------|
| Tariff Funded | 206.33 | 190.47 | 254.03 | 312.15 | 182.87 | 281.47 | 232.06 | 399.23 | 179.57 | 2,238.18 | 248.69 |
| PSIP Funded | 66.83 | 54.04 | 67.95 | 104.78 | 62.32 | 24.21 | 199.21 | 98.41 | 44.09 | 721.83 | 113.63 |
| Ring- Fenced | 4.76 | 14.9 | 21.92 | 58.99 | 33.94 | 32.19 | 36.67 | 39.19 | 58.30 | 300.86 | |
| Total | 277.92 | 259.41 | 343.9 | 475.92 | 279.13 | 337.87 | 467.93 | 536.83 | 281.96 | 3,260.87 | 362.32 |

It should be noted that for the regulatory control period 2006 to 2011, the Capex out-turn funded by tariff revenue was approximately 62% of total Capex out-turn, as compared to 69% of total Capex out-turn for the period 2011-2019. The average yearly out-turn for 2011-2019 was \$248.69 million and \$113.63 million for tariff funded projects and PSIP/ring-fenced projects respectively, accounting for an average yearly out-turn of \$362.32 million. The average yearly out-turn for 2011-2019 was marginally less than the average yearly out-turn of \$388.81 million for the 2006-2011 period. The average expenditure over the two periods is indicative of the quantum of Capex projects that T&TEC may be able to achieve on an annual basis.

**Table 4: Breakdown of Tariff Revenue Funded Capex Out-turn by Investment Category
2011 - 2019 (TT\$ Millions)**

| Year Category | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | Total |
|--------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-----------------|
| Transmission | 39.05 | 53.12 | 77.95 | 129.15 | 31.02 | 81.06 | 61.31 | 66.81 | 52.67 | 592.15 |
| Distribution | 154.44 | 124.80 | 127.32 | 149.47 | 136.62 | 168.88 | 139.28 | 187.85 | 107.19 | 1,295.85 |
| Other-Network Related | 2.89 | 4.17 | 8.98 | 18.06 | 4.66 | 10.70 | 9.21 | 17.65 | 10.92 | 87.24 |
| Non-Network Related | 9.95 | 8.38 | 39.78 | 15.47 | 10.57 | 20.83 | 22.26 | 126.92 | 8.79 | 262.94 |
| Total | 206.33 | 190.47 | 254.03 | 312.15 | 182.87 | 281.47 | 232.06 | 399.23 | 179.57 | 2,238.18 |

As seen in **table 4** above annual out-turn Capex funded from tariff revenue varied between \$179.57 million in 2019 (minimum) and \$399.23 million in 2018 (maximum), and the out-turn Capex under the different investment categories also varied significantly on an annual basis. It should be noted that there was significant investment in distribution assets. The annual expenditure on these assets accounted for the greatest proportion of the tariff revenue funded Capex every year during the period 2011 to 2019, and was approximately 58% of the total tariff revenue funded Capex.

5.0 Considerations and Measures in the Treatment of Capex

The RIC's review of T&TEC's out-turn Capex has identified issues that need to be addressed going forward. The RIC acknowledges that T&TEC faces considerable cost uncertainty, as factors in the operating environment are difficult to predict and can easily change, however, measures can be implemented to reduce the risk of undesirable outcomes such as cost overruns, project delays and lack of project execution. Further, the challenges associated with the governance arrangements for T&TEC due to state ownership warrants more robust oversight of the capital planning process and a stronger focus on the deliverability (including supply chain implications) of capital projects. The following considerations and recommendations are proposed to promote efficiency and prudence throughout all stages, from the planning to the execution of T&TEC's capital expenditure programme for the forthcoming regulatory control period.

- **Use of Tariff Revenues for Government Driven Projects**

T&TEC's spending on some Government driven projects, for which funding was not provided by the Government, affected its ability to undertake and complete the projects that were approved by the RIC in the 2006-2011 regulatory control period. In this regard, and to ensure that tariff revenue will not be used for purposes other than those specified in the RIC's Final Determination in the forthcoming regulatory control period, the following are proposed:

- i. Engage the line Minister and the Ministry to discuss the RIC's concerns and present proposals to address same, seeking the Minister's assurance that these concerns would be addressed.
- ii. Require 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 by T&TEC's Board to fulfil certain regulatory mandates, and to desist from actions, not approved by the RIC.

- **Regulatory Treatment of Under and Over-spend and Incomplete Execution of (RIC approved) Capex 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 amount, yet there were several projects that were incomplete and/or over budget, and others that were not executed during the regulatory control period. Therefore, there must be strategies or mechanisms to treat with under and over-spend on projects, those projects not undertaken and those that were not completed.

Under-spends on Capex, arise when expenditure is less than the approved amounts. These can be due to efficiencies in spending 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-back¹⁴ at the end of the regulatory period.
- ii. Where approved projects **are undertaken** and the associated expenditure is less than the approved amount, two options may be used as follows:
 - The RAB can be adjusted downward at the end of the period. The service provider would have benefitted from the savings during the past period and customers would now benefit from a lower than anticipated increase at the beginning of the new control period, when the RAB is adjusted.
 - The approved expenditure is retained in the closing RAB with no adjustment for actual spending. This option provides strong efficiency incentives, as utilities benefit from earning a return on forecast rather than the actual RAB, and are not disadvantaged if they 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:

¹⁴ Claw back results in downward adjustment of the revenue requirement for the subsequent regulatory period.

- i. Where overspending is 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 overspending is determined to be prudent the associated excess spend will be allowed in the RAB.

For the 2006-2011 regulatory control period, the RIC allowed only the Capex projects that were deemed to be prudent and efficient. These principles will again be applied to those projects that are to be completed in the forthcoming regulatory control period. However, T&TEC's lack of execution of 38 of the 107 RIC approved Capex projects during the 2006-2011 regulatory control period for which \$170.1 million was allocated, amounted to excess returns (on capital) to T&TEC of about \$13.6 million.

In light of the above, the RIC is considering three options to treat with under-spend of RIC approved Capex for the forthcoming regulatory period.

- i. Adjusting the revenue requirement in the subsequent regulatory period for any under-spend; this is the normal practice of regulators, in similar circumstances.
- ii. Providing rebates to customers to account for any excess returns derived via the revenue requirement. This option would send strong signals to T&TEC about the importance the RIC places on the completion of approved projects, and the consequences of not undertaking them.
- iii. Identifying specific projects that any excess returns would be spent on, in order to improve the delivery of service. 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 those originally approved by the RIC. The RIC's view on the treatment of investment funds provided ex-ante, for projects which 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 2014 determination by the Competition Commission (CC), in the United Kingdom, concerning Northern Ireland Electricity (NIE)¹⁵. The final ruling of the CC stated, “if NIE can defer planned asset replacement projects without increasing expected costs over the long term (and while still complying with statutory obligations, etc.), it could benefit financially”. Thus, a similar approach by the RIC would be appropriate where T&TEC’s delay in executing 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.

- **Use of Capex Incentive Mechanisms**

State-owned utilities often do not respond to financial incentives in a similar manner as private firms, which generally seek to maximise their profit. This may be largely due to the way Government perceives and executes its ownership function, and the type of financial support/arrangements that are provided. In instances where utilities (public or private) focus on recovering costs and improving efficiency, they are expected to 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 a strategy to incentivise utilities, whether via efficiency carryover or other type of incentive mechanism. Such mechanisms would include:

- **Capex Triggers** – When rates have been set for a control period, a guaranteed level of revenue 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 rates, conditional on the achievement of pre-determined project milestones. Triggers can be positive or negative; either increasing or decreasing revenues depending on the event that 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 failure to meet to the target or project milestone is also not straightforward.

¹⁵ See Final Determination of the Competition Commission (March 2014) on a matter referred to it by the Northern Ireland Electricity Limited (NIE), following the Northern Ireland Authority for Utility Regulation’s 2012 price determination for NIE.

- **Incorporating Contingency Margins in the Capex forecast**

The RIC can include an allowance for contingencies to provide a buffer against cost overruns relative to the overall Capex forecast, when these are set. 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. The conversion of existing public lighting to more efficient LED lighting is one example of a project that may be suitable for use of such funds from the contingency margins in the Capex forecast.

- **Strengthening the Regulatory Capex Reporting Framework**

The RIC is of the view that monitoring of and reporting on projects, are essential 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. Including, in the existing reporting framework, a further requirement for T&TEC to submit Capex reports in a format suitable for public release by predetermined dates. This places the onus on T&TEC to not only prepare the reports but, by making details of these reports public, the RIC hopes that T&TEC will be motivated to more conscientiously undertake and complete the approved capital programme. Specifically, this will include:
 - Biannual reporting on the status of projects; and
 - Providing detailed data on each project annually.
- ii. Establishing fixed dates by which T&TEC must execute certain Capex related projects as outlined in the RIC's Final Determination, and holding T&TEC to account for instances where such deadlines are not met without reasonable explanation.
- iii. Employing the use of 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. The

hope is that the negative reputational effect of public shaming (through disclosure) may induce compliance.

- iv. Conducting a mid-term review of Capex.
- v. Implementing a capital expenditure safety net – this allows for an in-depth review of the Capex, where Capex spend in any given year of the control period, is in excess of 15% - 20% over/under the allowed Capex for that year.

- **Treatment of other issues**

On the basis of the RIC's past experience with T&TEC's execution of its capital expenditure projects, and in order to improve the quality of proposed Capex submissions and Capex execution, the RIC suggests:

- The development and submission of detailed Asset Management Plans by T&TEC to the RIC, alongside longer term capital investment plans, with a view to assess how T&TEC's proposed Capex for the regulatory control period integrates with same.
- The use of a self-certification assurance process, which is a written commitment by T&TEC's Board that its Capex projections are prudent and efficient. T&TEC will not be required to retain the services of an independent third party to conduct this exercise.
- Discussion among the relevant stakeholders (Government, Regulator and Utility) on the implementation of a Management Incentive Plan which provides appropriate incentives, such as, performance related pay, for senior management of T&TEC to improve the utility's performance with respect to the execution/management of Capex projects.
- The establishment of a Stakeholder Monitoring Group to oversee the implementation and delivery of the approved Capex plan against T&TEC's out-turn and to hold T&TEC accountable for its performance during the regulatory control period. The RIC would chair this group.
- The continuation of detailed ex-post efficiency reviews of T&TEC's performance with respect to capital expenditures.
- Allowing only prudent and efficient expenditure into the RAB for out-turn Capex undertaken outside of a regulatory control period.

6.0 Conclusion

The capital programme that is approved by regulators 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 regulators to adopt robust approaches to scrutinising, incentivising and adjusting capital investment allowances (where necessary) is paramount. Moreover, the RIC is mandated by its parent legislation to ensure that the service provider that operates under prudent and efficient management will earn sufficient revenue to finance necessary investment. The RIC must endeavour therefore, to ensure that the approved capital programme is one that is prudent and undertaken in an efficient manner and at the same time, that the rates which it sets will provide the revenues that will allow the utility to successfully carry out this programme.

The RIC is of the view that the use of a combination of top-down and bottom-up analyses alongside other analytical tools to assess T&TEC's Capex proposal, will result in an efficient Capex programme that is manageable by T&TEC and will meet the needs of customers. On the basis of its assessment of out-turn Capex for the 2006-2011 regulatory control period and subsequent period up to 2019, the RIC has proposed several measures to discourage T&TEC's use of tariff revenues for Government driven projects in the forthcoming regulatory control period (2021-2026). The RIC has also proposed measures to incentivize T&TEC to carry out the approved Capex programme and will monitor and report to stakeholders on T&TEC's execution of same.

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