



The Energy Chamber
of Trinidad & Tobago
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Energy Chamber of Trinidad & Tobago

Response to the RIC Rate Review Draft Determination

March 31th 2023

Executive Summary

The Energy Chamber of Trinidad and Tobago welcomes the opportunity to participate in the rate review process for electricity which is being undertaken by the Regulated Industries Commission (RIC).

The Energy Chamber has consistently and publicly stated for many years that the current electricity rates need to be revised. The Energy Chamber is aware of several price distortions which create an artificially low price for electricity. This is unsustainable and should be rectified. The Energy Chamber supports the principle that (with a specific exception) consumers should bear the full cost of electricity generation, transmission and distribution. The Energy Chamber supports that principle that there should be no cross subsidisation between sectors (in other words industrial consumers should not subsidise residential or commercial consumers or vice versa).

The specific exception that the Energy Chamber supports is that all households should have access to a tranche of electricity at a low price. There are excellent social and economic policy objectives behind making sure that every single household is able to afford a basic supply of electricity for lighting and basic essential appliances. All children need to be able to do their homework under electric lights and families need to be able to safely refrigerate food.

Households who consume large quantities of electricity should however pay a price that reflects the cost of generating that electricity. There is no good social or economic policy justification to subsidise swimming pool pumps or central air conditioning systems.

The provision of a cheap tranche of electricity for all households should not be subsidised by the industrial sector. Subsidies should be provided either by the top tranche users of residential electricity or directly from a central government grant.

While the Energy Chamber supports the principle of rates reflecting the cost of generation, transmission and distribution of electricity, we also believe that the current rate review needs to place the electricity sector in a wider context of the overall energy industry, and specifically the gas value chain. Virtually all electricity in T&T is generated through burning natural gas. For more than a decade, there has been a shortfall in national natural gas production compared to overall installed demand. Demand for natural gas outstrips supply and from a national policy perspective every molecule of natural gas must be used to generate as much economic activity as possible.

Given the current pricing formula for natural gas for electricity, it is much more beneficial to the overall economy of Trinidad and Tobago to use the resource in the export oriented (forex generating) natural gas value chain, than it is to be used in the (forex consuming) electricity value chain.

We recommend that this issue be placed at the centre of the rate review process and that decreasing the volume of natural gas being used in electricity generation be set as an overarching policy objective. This can be achieved by:

- Increased efficiency in the generation sector, including reducing peak demand in the evening period (which brings the more inefficient generation units online).

- Improved conservation and efficiency in consumption of electricity (with the biggest opportunities existing in the residential and commercial sectors).
- Rapidly introducing renewable energy at both grid scale and creating the environment for smaller private investments into renewable generation and the household and business level.

We appreciate that setting this policy is not the direct responsibility of the Regulated Industries Commission. However, we also note that the objective of the consultation process is to gather the views of stakeholders and to reflect these in the final determination where appropriate.

The Energy Chamber accordingly recommends that **improving energy efficiency** be placed as a core principle within the rate review process.

The Energy Chamber also recommends that the RIC places a firmer focus on the operating costs and margins of not just T&TEC, but also the Independent Power Producers (IPPs). Consumers must not carry the costs of any additional burden or wastage, for example through mismanagement of overtime or high administrative and managerial overheads.

The costs of inefficiencies must not be passed on to the consumer.

The Energy Chamber also believes that technology adoption and grid modernisation need to be key focuses and that investments in these areas can lead to greater levels of efficiency and cost reductions. This needs to be a focus for the RIC as they assess the operations of T&TEC.

We therefore make the following specific recommendations for the RIC to consider:

1. Remove the cross subsidy of the residential sector by the industrial sector that still exists within the new rate proposals.
2. Place reducing gas utilization in electricity generation, energy efficiency and conservation as key policy objectives, and measure the proposed changes against that objective.
3. Place a stronger focus on the cost effectiveness of T&TEC and the productivity of the entire workforce (administrative and managerial staff, in addition to field staff). Place an emphasis on investments in new technology to improve the efficiency of operations and the modernization of the electricity grid.
4. Mandate reliability of power generation and place mandates for efficiency for IPPs.
5. The largest increases in prices are for the industrial sector. The RIC should consider increasing the rates incrementally in this sector over time, rather than one significant step change. We recommend increases over a 3–5-year period.
6. Include time-of-use tariffs to encourage consumers to spread electricity usage throughout the 24-hour day and reduce peak consumption.
7. The RIC should mandate that T&TEC rolls-out energy efficiency and conservation programmes to the public to reduce consumption of electricity.
8. Create a 5th Tier for the largest users of electricity in the residential sector or investigate the nature of high-consuming households, placing the highest users into the industrial pricing.

9. Remove Value Added Tax on electricity, which does not benefit T&TEC, but the removal of which would cushion the impact of cost increases on residential customers. It would also reduce the cash flow burden on commercial/industrial customers where VAT paid to T&TEC is meant to be a pass-through but often has to be recovered via VAT refunds which currently take years to be received.

Background and Overview

The Energy Chamber has long been an advocate for an increase in electricity rates as a mechanism to drive conservation and improve energy efficiency. Trinidad & Tobago is very energy inefficient, both in terms of energy use per capita and energy use per unit of GDP generated in the economy.

The Energy Chamber has done significant advocacy work to show the opportunity cost of natural gas going into the electricity, in the context of persistent shortfalls in delivery of natural gas to the LNG and petrochemical sectors. Our analysis has shown that diverting natural gas from the electricity value chain, where it is supplied at heavily discounted prices to the LNG and petrochemical value chain, is hugely beneficial to the economy of Trinidad and Tobago. Gas diverted to petrochemicals and LNG, increases the value added in the economy, increases government revenue and ensures greater supply of foreign exchange,

Our analysis has been influential in driving the current policy of introducing renewable electricity into the grid.

This objective to reduce natural gas utilisation in the electricity sector is key to our recommendations.

Shifting pattern of electricity use

The data from the RIC on electricity usage shows an overall modest increase of 4% in electricity usage over the 12-year period. However, this aggregate data masks much more significant trends in usage which indicate a much more worrying and unsustainable trend in the electricity sector. Over the 2010 – 2021 period electricity use in the industrial sector declined by 20%. This is the sector that generates wealth, government revenue and foreign exchange.

Over this same period, the commercial sector (which generated GDP but typically consumes forex) increased electricity usage by 10% and the residential sector (which generates neither GDP nor forex) increased by 31%.

This raw data is shown below in the Table 1 and the graphical representation is shown in Figure 1.

Year	Residential		Commercial		Industrial		Street Lighting		Total
	GWhSold	Share(%)	GWhSold	Share(%)	GWhSold	Share(%)	GWhSold	Share(%)	GWhSold
2010	2,271	28.7%	771	9.8%	4,761	60.2%	111	1.4%	7,914
2011	2,352	28.6%	784	9.6%	4,964	60.4%	112	1.4%	8,212
2012	2,448	29.0%	813	9.7%	5,052	59.9%	115	1.4%	8,429
2013	2,569	29.3%	867	9.9%	5,216	59.5%	117	1.3%	8,769
2014	2,619	29.9%	909	10.4%	5,120	58.4%	119	1.4%	8,767
2015	2,754	31.1%	976	11.0%	5,001	56.5%	121	1.4%	8,853
2016	2,908	33.3%	1,015	11.6%	4,700	53.7%	123	1.4%	8,746
2017	2,940	34.4%	1,003	11.7%	4,487	52.5%	123	1.4%	8,554
2018	2,952	34.9%	980	11.6%	4,407	52.1%	124	1.5%	8,463
2019	3,082	36.7%	996	11.9%	4,197	50.0%	126	1.5%	8,401
2020	3,330	39.6%	901	10.7%	4,045	48.1%	129	1.5%	8,405
2021	3,298	39.9%	861	10.4%	3,979	48.1%	130	1.6%	8,268
% Change	31%	11%	10%	1%	-20%	-12%	15%	0.2%	4%

Source: RIC & MEEI Bulletins

Table 1 Electricity Usage by Sector 2010 – 2021

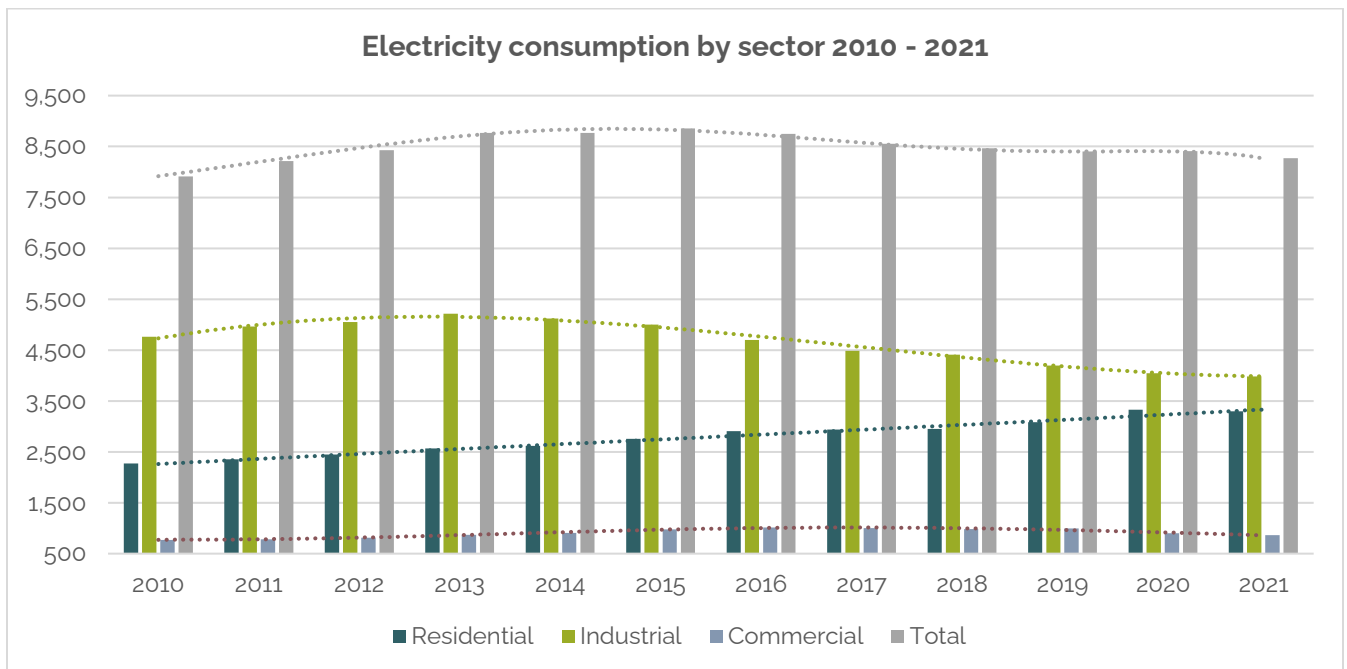


Figure 1 Electricity Usage by Sector 2010 – 2021

The data, when represented as a % of the total electricity usage shows a stark difference between 2010 to 2021. The residential sector utilized 29% of the electricity in 2010 which moved to 40% in 2021, whilst the industrial sector moved from 60% to 48%.

This is shown in figures 2 and 3 below.

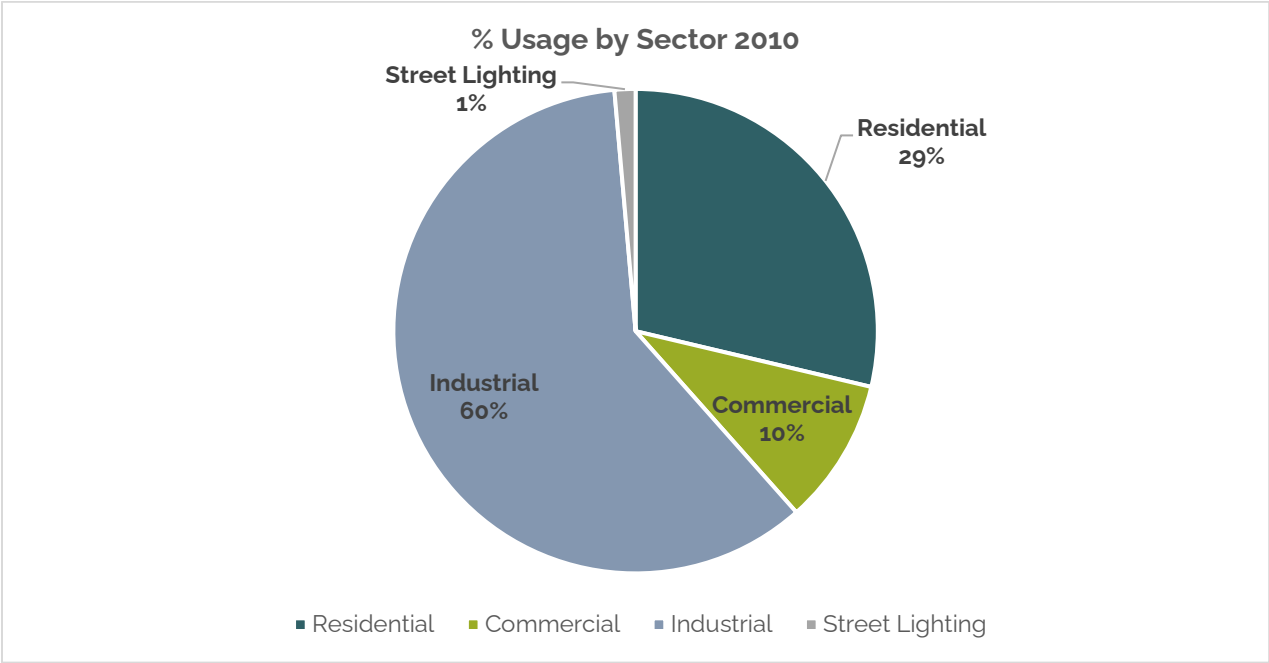


Figure 2 % Electricity Usage by Sector 2010

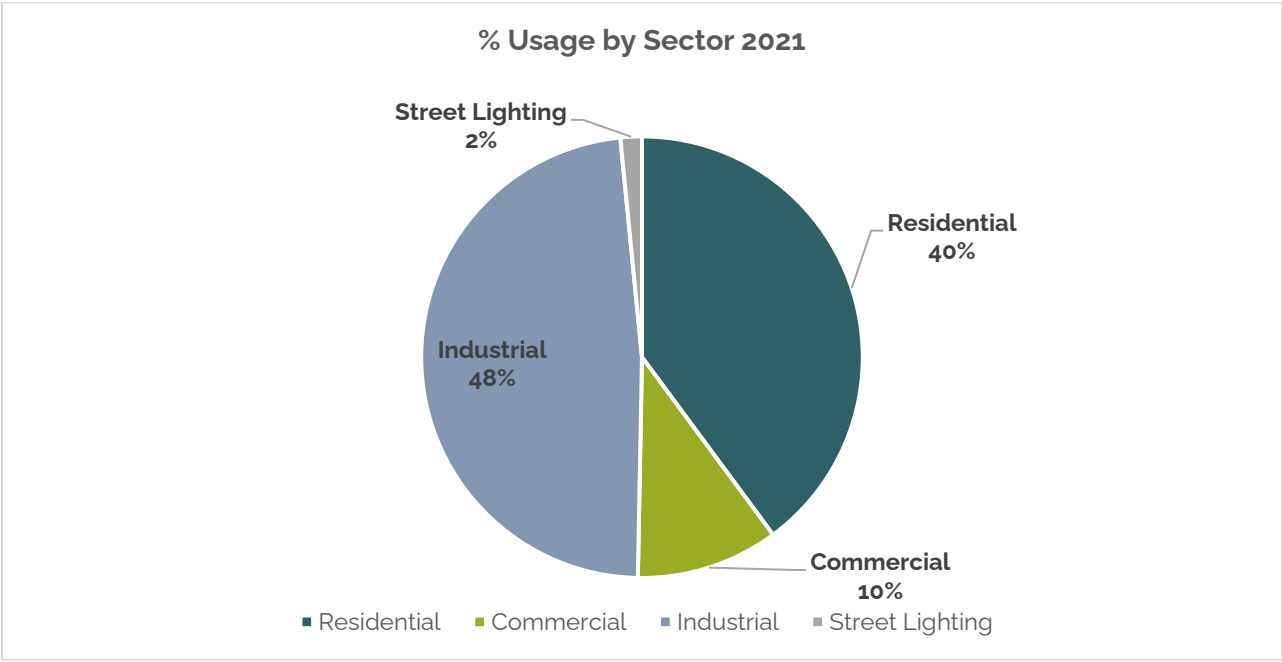


Figure 3% Electricity Usage by Sector 2021

The data for the industrial and residential sectors were compared to the country's GDP per capita over the period 2010 to 2021 as shown in figure 4.

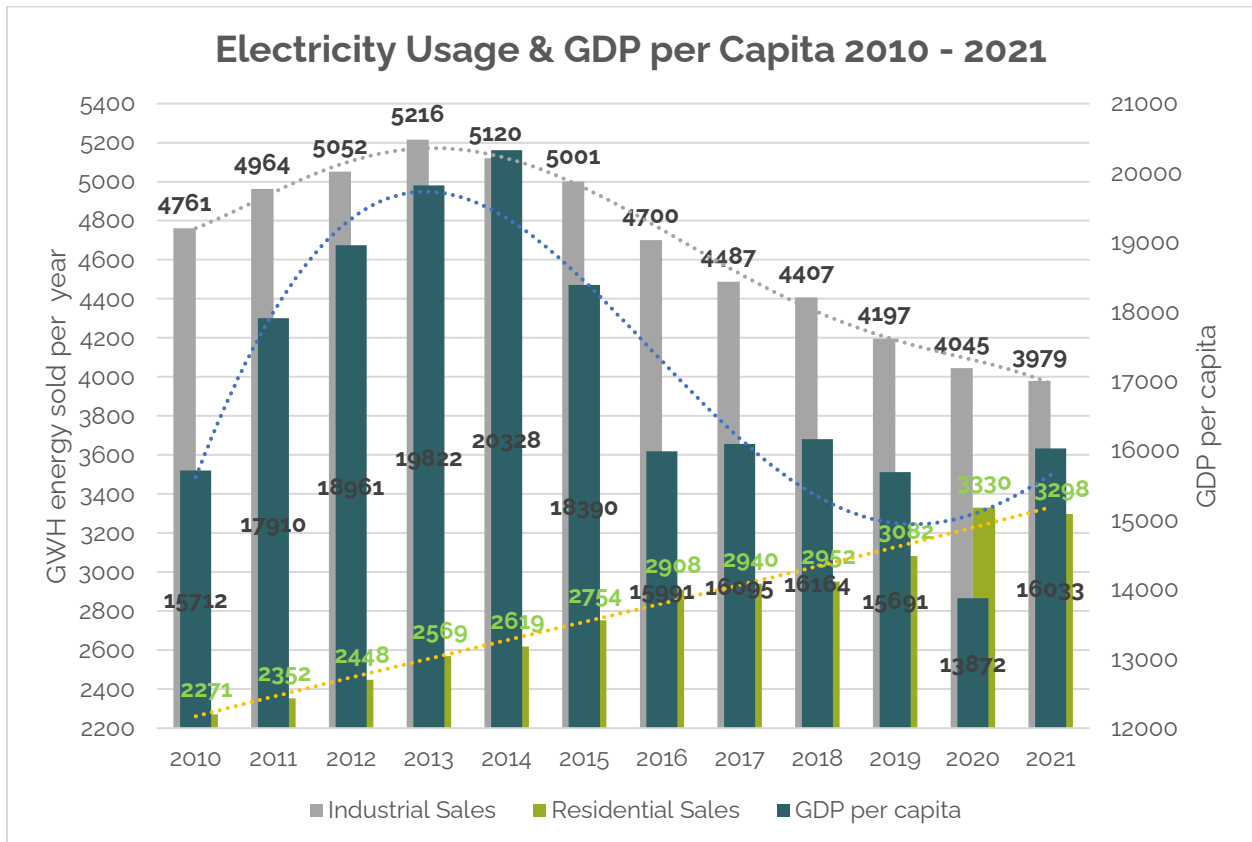


Figure 4 Electricity Usage & GDP per capita 2010 -2021

This pattern of decreasing industrial electricity use and increasing residential and commercial electricity use can be correlated against the trend in GDP per capita, with GDP per capita falling after 2014 as industrial electricity usage fell. The fall in electricity usage in the industrial sector has been driven by decreased availability of natural gas which has driven steel and petrochemical plant closures, in addition to the closure of the oil refinery.

In contrast and despite the fall in GDP per capita, residential electricity use has continued to increase.

There has been a longstanding policy idea in Trinidad & Tobago that cheap electricity has helped the industrial sector be more competitive and that this has been a major source of Trinidad's historical strong industrial performance. Government investment promotion literature in Trinidad & Tobago still often boasts of the availability of competitively priced electricity. The available data suggests however that cheap electricity is driving demand in

the commercial and residential sectors, and that this is ironically contributing to the gas supply shortage that has threatened the future of Trinidad's industrial sector.

As shown in Figure 5, globally, there is a high correlation between GDP per capita and high energy usage. Trinidad and Tobago falls in the category of countries that have a high GDP and high electricity usage. If Trinidad & Tobago wants to reverse the trend of the past decade of falling GDP, it needs to ensure that it is able to meet the demands of the industrial sector for both natural gas as a feedstock and competitively priced electricity.

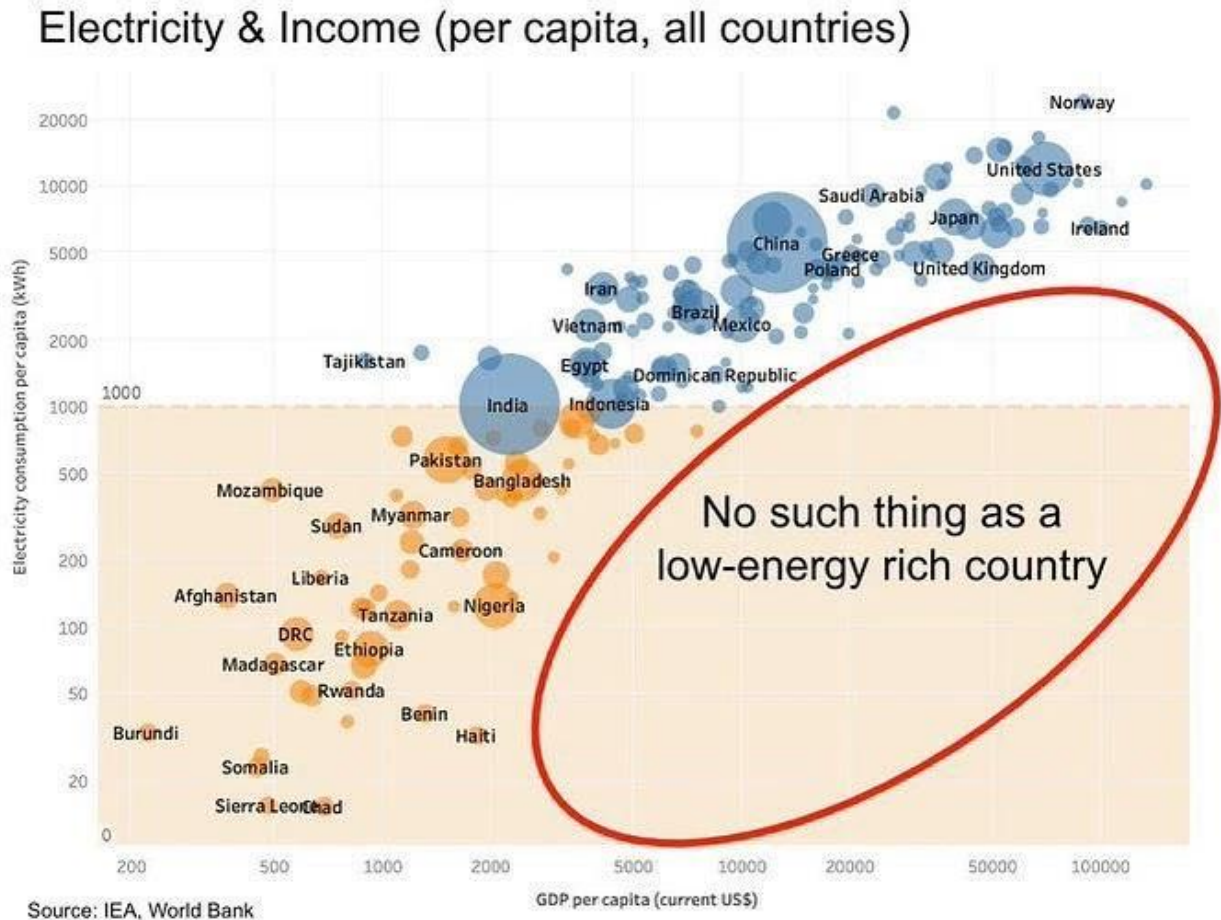


Figure 5 Global Electricity Usage & GDP per capita

Uneven growth in demand in the residential sector

The growth in electricity use in the residential sector has been skewed to the households using the largest amounts of electricity. Between 2010 and 2020 the Residential Customer Base grew by 17% but this growth was concentrated in the high user categories. The data shows that the households that use less than 1500 kWh bimonthly (the lowest band) have stayed almost unchanged from 2010 to 2020; 300,000 households in 2010 compared to 302,000 households in 2020. By contrast the number of households in the highest category

(over > 2000 kWh) has more than doubled from 40,000 households in 2010 to 84,000 households in 2020 (a 110% increase).



Figure 6 Residential Electricity Usage by household 2010, 2017 & 2020

The growth of households in this highest band of means that 49% of the residential electricity is being used by 84 thousand households or 20% of the population. In terms of gas usage, this 20% of the population uses 20% of all the natural gas used in the power sector. For comparison, the whole industrial sector uses 48% of the natural gas. The 20% natural gas usage by the 84 thousand households is approximately 46 mmscfd, which if converted to LNG would be 5 cargoes or could keep a mid-size petrochemical plant online. The value of this gas could range from USD 50 to 150 million just on gas sales.

Gas Usage Data in the Electricity Sector 2020		
Power Usage	Gas Utilization mmscfd	Gas Utilization %
80K homes 1-400kwh	3	1%
146K homes 401-1000kwh	16	7%
76K homes 1001-1500kwh	15	6%
46K homes 1501-2000kwh	13	6%
84K homes >2000kwh	46	20%
Commercial & Street Lighting	29	12%
Industrial	114	48%
Total	237	100%

Table 2 Electricity Usage by Gas Consumption

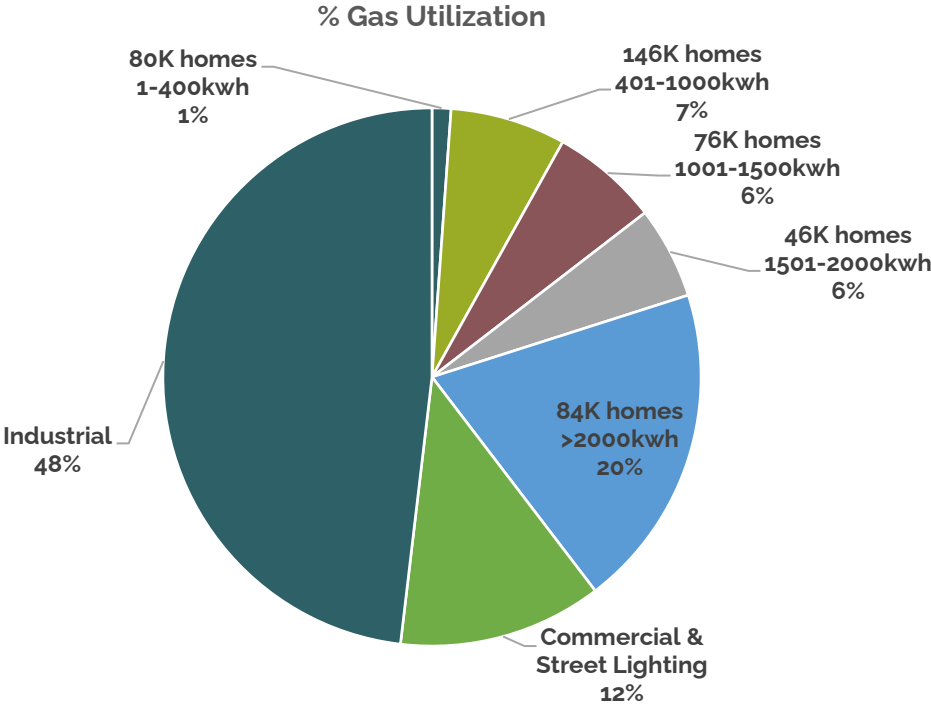


Figure 7 Usage of Electricity by Gas Consumption

The data is unequivocal. The GDP generating sectors of the economy have been starved of the natural gas that is required for them to operate and instead that natural gas has been allocated to supply cheap electricity which has primarily benefitted the 84,000 households who consume significant amounts of electricity (and hence gas) with little or no positive impact on GDP, forex availability, government revenue or jobs.

This situation needs to be reversed and the RIC rate review process needs to place this crucial national policy issue at the forefront of its determination.

Recommendations:

1. **Remove the cross subsidy of the residential sector by the industrial sector that still exists within the new rate proposals.**

The RIC Draft Determination includes the principle that there should not be cross subsidies between sectors. The Energy Chamber fully supports this principle. However, under the current proposals the industrial sector is still subsidising the residential sector.

The Energy Chamber proposes that this cross subsidy between industrial and residential sectors be removed. Instead, any subsidy to be provided to the lower bands of electricity use, should be provided by the highest bands of residential electricity users, who have seen their consumption increase over the past decade. This could be done by creating a new fifth tier > 2500 kWh which will now carry the subsidy for the residential category. This will have the benefit of encouraging users in this category to place a strong emphasis on energy efficiency or introducing small scale renewables into their households and therefore reduce the volumes of natural gas being consumed by this non-wealth generating sector.

This, by no means affects the lower end users (0 – 1000 kWh) as based on the analysis and their consumption patterns, there is no need to increase their rates.

2. **The Energy Chamber recommends that reducing gas utilization in electricity generation, energy efficiency and conservation should be key policy objectives. The rate review proposals should be measured against whether they fulfil that objective. The RIC should recommend the introduction of a feed-in tariff, net-metering or similar measures that will encourage the adoption of small scale renewable energy.**

We have noted that in some of the consultations there have been recommendations that there should be policies to increase the consumption of electricity because of a perception of oversupply/overcapacity. The Energy Chamber does not agree with this recommendation, which is based on a misconception of the overall national economics of the gas value chain. Every unit of natural gas not used in electricity generation has a much more valuable use in export earning LNG and petrochemical sectors. The focus must be on reducing gas usage in the electricity sector.

3. **Place a stronger focus on the cost effectiveness of T&TEC and the productivity of the entire workforce (administrative and managerial staff in addition to field staff). Place an emphasis on investments in new technology to improve the efficiency of operations and the modernization of the electricity grid.**

The report speaks of improving efficiency of the maintenance crew, but nothing of improving the efficiency of the administration cost to run T&TEC. There are no known lean operation processes being recommended for streamlining the utility to bring it to international standards, such as digital solutions for improving customer interactions, data systems to improve reporting, visualization and decision making, asset management systems for improved maintenance and reliability. No mention of a full manpower audit inclusive of modernization of processes to optimize cost, which will reduce the burden to the customer.

4. Mandate reliability of power generation and place mandates for efficiency for IPPs.

There is a lot of focus on the reliability of supply, but little or no focus on the reliability of generation. The RIC has a quality-of-service standard on generators and should utilize this mechanism to monitor and encourage reliability which has a direct impact on efficiency. T&TEC should be mandated by the RIC to look at their existing PPAs and seek ways of working together with IPPs to improve efficiency. Every year that the system generation stays the same, Trinidad and Tobago loses 100 million USD, based on that within 4 years, a completed plant for 300MW can be built to replace the old and inefficient generation.

5. The largest increases in prices are for the industrial sector. The RIC should consider increasing the rates incrementally in this sector over time, rather than one significant step change. We recommend increases over a 3–5-year period.

The impact on competitiveness cannot be generalized, but analysis should be done on each rate category to examine the effect to the customer of that rate type. Heavily dependent energy customers percentage of operation cost will not be 1.5% of the total cost as stated in the Draft Determination. Competitiveness is a culmination of operational costs, ease of doing business, market access, hard currency availability, to name a few criteria. The ease of doing business and hard currency availability in Trinidad and Tobago has already eroded a huge portion of the competitiveness of businesses operating here. Other operating costs such as natural gas prices and raw materials have already increased substantially in recent times and if the increase in the cost of electricity is not administered strategically, it can have a profound effect on businesses in the energy sector, driving some of them to become marginal producers in the global market, hence potentially reducing revenue to Trinidad and Tobago. We suggest that the cross subsidy is removed and the cost increase is applied in a two-step increase across 3-5 years, instead of one huge increase over 1 year.

6. Include time of use tariffs to encourage consumers to spread electricity usage throughout the 24-hour day and reduce peak consumption.

Time of Use tariffs should be included for the start of the period, as the data for this analysis should exist already as T&TEC annually creates a load duration curve to assess their loss of load expectation (LOLE). The time of use tariff is an important tool to help manage the peak demand which has an impact on the need for generation expansion as

well as the incremental cost of generation. The peak demand is usually met by inefficient generation and has the highest cost; this demand is mainly driven by the residential customers as the industrial customers are usually base loaded. The time of use tariff is also important for electric vehicle charging, as this has the possibility to increase the peak demand as most people may put their vehicles to charge after coming home from work, which happens to coincide with the peak demand. The typical load demand curve for a power system is shown below in figure 8.

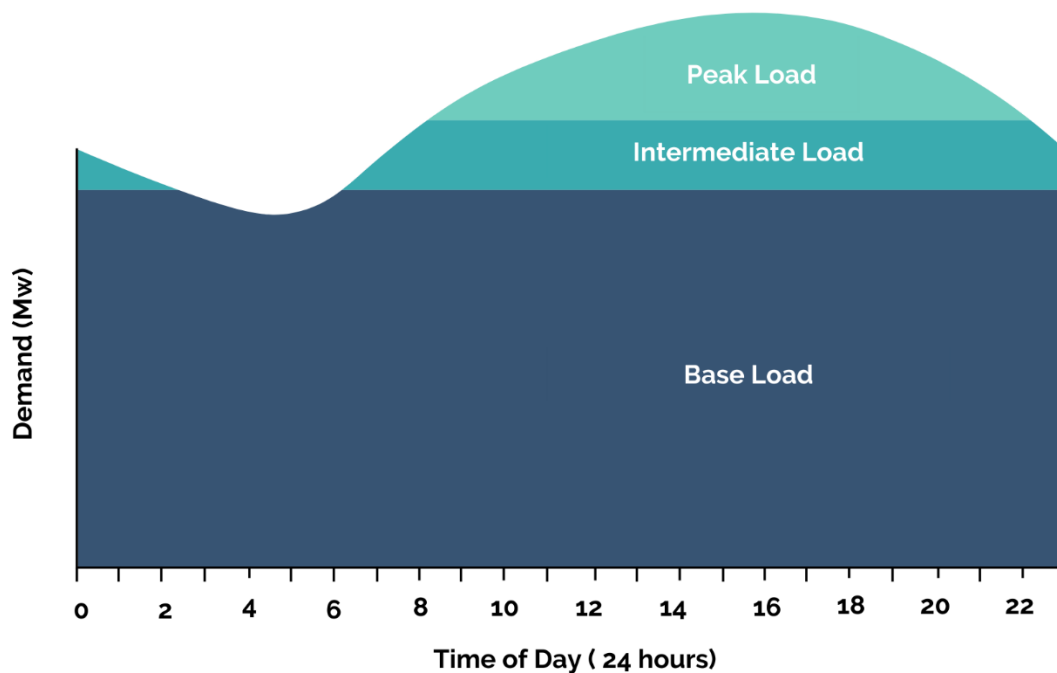


Figure 8 Typical Load demand curve

7. The RIC should mandate that T&TEC roll-out energy efficiency and conservation programmes to the public to reduce consumption of electricity.

Activities for conservation and energy efficiency are limited and don't provide enough support to customers. No energy efficiency incentives or education programs are defined. More emphasis on conservation and energy efficiency must be done to help reduce the consumption of natural gas within the electricity sector; this will lead to this gas being available to other areas in the energy sector which can be monetized for increased revenue to Trinidad and Tobago.

8. Create a 5th Tier for the largest users of electricity in the residential sector or investigate the nature of high-consuming households, placing the highest users into the industrial pricing.

In our analysis, we have noted that there are groups in the residential sector that use large quantities of electricity. We propose that there is a creation of a 5th tier for the largest users

of electricity. If a 5th tier cannot be done, an investigation should be done to determine the nature of the usage of electricity at this consumption rate. These households using the largest volumes, should fall into the industrial sector as their consumption outweighs the lowest consumption for the industrial sector.

9. **Removal of Value Added Tax on electricity, which does not benefit T&TEC, but its removal would cushion the impact of cost increases on residential customers. It would also reduce the cash flow burden on commercial/industrial customers where VAT paid to T&TEC is meant to be a pass-through, but often has to be recovered via VAT refunds which currently take years to be received.**

The sector which will feel the largest burden of the increased rates will be the industrial sector. While this measure may not be in the RIC's remit, it should be noted that VAT payments are significant and there are major delays in VAT refunds. VAT payments do not impact on T&TEC operations and as such, we recommend the removal of VAT payments on electricity for all sectors, including the industrial sector. This would free up cashflow and make the increases in rates less burdensome on the industrial users.