

REGULATED INDUSTRIES COMMISSION
ELECTRICITY TRANSMISSION & DISTRIBUTION PRICE CONTROL REVIEW 2006 – 2010
DRAFT DETERMINATION

SOME SELECTED OBSERVATIONS

by
Emru D. Millette

1. Introduction

The Regulated Industries Commission (RIC) has graciously granted an extension of time to 2006 March 17 for the submission of comments on the *Draft Determination* of January 2006 on its *Electricity Transmission and Distribution Price Control Review, 2006 – 2010*. The following selected observations are as a result of this time extension and are to be read jointly with my earlier submissions of 2006 February 09 and February 13 respectively.

2. Provision of Meters

2.1 Certain countries have reported success in providing customers with more efficient and cheaper meters and more cost-effective meter reading by the introduction of competition into the provision of these services. Greatest impact of competition was reported amongst the most needy and poor customers. It would be useful to know that the RIC has satisfied itself with the T&TEC procedures in use in this regard.

2.2 Given the fact that the Utility has previously used estimated consumption to a great extent, and the RIC is now requiring a stipulated minimum of actual readings for billing purposes, it would be useful for the Utility to analyze the hard data so acquired to recover the additional costs, and, amongst other potential applications, use the results to guide and upgrade its Customer Relations Policies. There are many advantages to be gained, and significant new streams of revenue reportedly to be generated by greater knowledge of customer preferences and demand for new services. The strategy of the Utility must be to offer “energy services”, that is electricity plus technology plus knowledge, rather than “just electricity at the meter”.

3. Pre-Payment Electricity Meters

In addition to comments made elsewhere on the appeal of the pre-payment electricity metering technology, the following publications helped give me comprehensive practical insight into some of the issues involved, especially the impact upon the needy and the poor in the community:

- 3.1** COLTON, Roger D., 1998 October. Fisher, Sheehan & Colton, Public Finance and General Economics, Massachusetts, USA. Prepayment Meters and the Low-Income Utility Consumer. 24 pp.
- 3.2** ESTACHE, Antonio, Vivien FOSTER, and Quentin WODON, 2001 September. Making Infrastructure Reform Work for the Poor: Policy Options Based on Latin American Experience. The World Bank Group. Finance, Private Sector and Infrastructure, Latin America and Caribbean Region. 20 pp.
- 3.3** PARETO ASSOCIATES PTY LTD., 2001 May. Smart Meters for Smart Competition. Handing Back Power to the Customers. Report for the Customer Energy Coalition. 95 pp.
- 3.4** ROBERTS, Simon, and William BAKER, Centre for Sustainable Energy. 2003, July. Towards Effective Energy Information. Improving Consumer Feedback on Energy Consumption. A Report to Ofgem. 45 pp.
<http://www.cse.org.uk/pdf/pub1014.pdf>
- 3.5** SMART METERING WORKSHOP GROUP, Ministry of Trade and Industry, United Kingdom, 2003. Report. 33 pp.
http://www.dti.gov.uk/energy/environment/energy_efficiency/smartmeter.pdf

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- 3.6 Commission for Energy Regulation of Ireland. Prepayment Consultation Paper: CER's Response to Comments Received and Prospective Next Steps. 2004 May 28. <http://www.cer.ie/cerdocs/cer04208.pdf>
- 3.7 Commission for Energy Regulation of Ireland. Electricity Tariff Structure Review: Alternative Tariff Structures. A Consultation Paper. 2004 July 01. 129 pp. <http://www.irish-energy.ie/uploadedfiles/Energyandbusiness/CERElecTariffReview04.pdf>
- 3.8 South Australian Council of Social Service Inc., Submission to the Essential Services Commission of South Australia on Consumer Issues with Pre-Payment Electricity Meters. June 2004. 10 pp.;
- 3.9 Energy Sector Management Assistance Programme. Joint UNDP / World Bank Report. Power Sector Reform in Africa: Assessing Impact on Poor People. August 2005. 168 pp.;
- 3.10 BALDOCK, Mark; Head of Metering, Ofgem, London, England. 2006 February 01. Domestic Metering Innovation. 59 pp. http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/13745_2006.pdf

4. Energy Services

The need to address the issues of metering must serve as a catalyst for the Utility to examine its role in the country to the mid-21st century and restate its *Vision* and *Mission*. Perhaps the Utility needs to envision its relationship with its customers more in the context of a micro-marketeer and mass customization and less in the context of a tactical peddler of electrical power.

Comparable utilities elsewhere are seeing themselves being transformed into *Virtual Utilities* by capitalizing on, partnering with, and conducting joint research with the Knowledge and Information Technology-based industries. About the phenomenon, one commentator wrote in 1996: “*Within the next decade, the emerging (electrical distribution) infrastructure anchored by an evolved multimediantet will transform energy retailing into a high-volume, high-selection, superb-quality, and relatively low-margin business, conducted by a few with great sophistication and intimidating knowledge.*” (DAR, V., 1996. *The Search for Consumer Content in Energy Marketing and Retailing. Public Utilities Fortnightly. September 15, 1996.*)

The concept of the *Virtual Utility* adopted in this Selected Commentary is that of Awerbuch & Preston (1997) of “... a metaphor for lean, flexible energy production/delivery and flexible, customer oriented energy services provision”.

Admittedly, with the present state of Distributed Power Generation in Trinidad and Tobago, and with the embryonic position on Renewable Energy use and Cogeneration, the conditions that give rise to the possibility of a *Virtual Utility* do not really exist.

However, a number of the services being discussed as new prospects, some of which T&TEC may already offer or contemplate, and some others that may not be immediately practicable in the present Trinidad and Tobago environment, include:

- 4.1 Billing and data analyses for small, medium, and large customers;
- 4.2 Cogeneration assessment and assistance, where applicable;
- 4.3 Consulting services for the installation of energy equipment, including possibilities under the Caribbean Single Market and Economy;

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- 4.4 Customer Compliance with the provisions of the Kyoto Protocol, where applicable;
- 4.5 Energy and Environment audits;
- 4.6 Energy management services;
- 4.7 Engineering diagnosis and solutions;
- 4.8 Equipment Insurance;
- 4.9 Equipment retrofitting and appliance replacement services;
- 4.10 Equipment Service repairs and warranty programs;
- 4.11 Home automation and related services;
- 4.12 Home Monitoring in association with specialist private-sector firms;
- 4.13 Flood Protection Services in association with specialized private-sector firms;
- 4.14 Information services on process and appliance technology options;
- 4.15 Plant operations and maintenance optimization;
- 4.16 Promotion of technologies and practices that can become bases for the upgrade of efficiency standards in Building Codes;
- 4.17 Reliability and Power Quality investigations;
- 4.18 Waste Management solutions;

5. Conservation and Environmental Protection

Performance-based Rating, and its predominant form of Price Caps, although inhibited by Revenue Caps, favours increased sales by regulated firms such as T&TEC in the present instance. In essence, however, the best energy-efficient and environmental-friendly strategy is to keep sales to as low a figure as possible.

Is funding possible from the Environmental Levy to pay the cost of research, education and related projects directed at consumers to conserve electricity and mitigate the environmental effects and environmental externalities of transmission and distribution? Does responsibility to pursue this rest with the RIC or with T&TEC?

6. Specialized Regulatory Department for T&TEC (Page ES41, & Chapter 14, First Bullet)

I am not sure whether the Terms of Reference (TOR) of this Proposed Specialized Regulatory Department would be circulated in draft form before being finalized. As an interested customer, I would hope it is. However, in the meantime, I suggest the following to be included in the TOR:

- 6.1 Updating of forecasting models;
- 6.2 Analysis and reporting of institutional feedback, and review of past policies;
- 6.3 Analysis of the impact on stakeholders of changes in policies, procedures, planning processes, standards, and practices;
- 6.4 The promotion of Alternative Dispute Resolution for the creation of policies and programmes that have “Win-Win” outcomes ;
- 6.5 Elaboration and monitoring of an electricity conservation programme, emphasizing effective conservation measures that approach both short term and long term resource conservation, while monitoring the cost of the measures themselves;
- 6.6 Ensuring the incorporation of concerns of all stakeholders, especially Definitive Stakeholders, in the policy development process, “understanding that while the process is extremely complex, it is not necessarily fragile.” (*A Definitive Stakeholder has “the power, the legitimacy and the urgency” to affect a decision positively or adversely - Mitchell, Agle & Wood, 1997*).
- 6.7 Simplification of texts of regulations and procedures so that they would be generally easily understood by stakeholders at first reading;

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7. Research

It is unclear from the documents at hand, and from the DD, whether the Utility has a Research programme. Enquiries to determine this have not been very fruitful up to the time of writing. If the Utility does not, then I suggest that it should have an aggressive programme with a claim on its budgets, both Capex and Opex.

It may be that research projects are already distributed throughout these budgets making them less easily recognizable.

The absence of a pragmatic research programme will leave the task of serious forecasting, for instance, *de facto* by default in the hands of the Regulator.

Without a Research Programme, serious training of Utility staff will be in jeopardy, and may even be out of step with the need.

In the case of one international utility, the Regulator was forced to note that an impressive and costly training programme funded by an international Donor had little to do with the needs of the Utility. Instead of it contributing to staff retention by the Utility, the trained staff found more attractive professional employment opportunities elsewhere in the world.

To deserve being paid for by ratepayer funds, the Research Programme must relate directly to the needs of the utility and its improvement in operational efficiency. The onset of Regulation by the RIC appears to offer an ideal opportunity to look in detail at the type of Research Programme that the Regulated Utility might consider.

To illustrate the position, it is felt that research activity should be looking into such topics as might suggest themselves from the text of the *Draft Determination* and the comments given in the *Kenesjay Draft Final Report*. While strategically as much as possible of these matters should be made public, the nature of some requires that they be confidential to the Utility and the Regulator.

The suggested topics are:

- 7.1** Alternative Energy Policy for T&T, focusing on Wind, Wave, and Solar Power - “renewable technologies that provide substantial public benefits and that would not be developed at this time without public support”;
- 7.2** Artificial Neural Network Short-Term Load Forecasting;
- 7.3** Business Risk Evaluation, Project Attributes, and Technological Options;
- 7.4** Characteristics of Peak Loads, Bottlenecks, and Overloads in Local Area Grid Networks;
- 7.5** Collaboration with POWERGEN to assess the full environmental costs of electricity generation;
- 7.6** Customer Decision-making Criteria;
- 7.7** Customer Needs and Tradeoffs between system operating costs and reliability of supply;
- 7.8** Economic Activity, Electricity Consumer Behaviour and Power Demand Forecasting in the short, medium and long terms;
- 7.9** Effective Forecasting tools for supply, load, and market data;
- 7.10** Error Analysis in Electric Utility Power Demand Forecasting;
- 7.11** Fiscal aspects of service provision to low income customers, especially in relation to billing, collection, education, and budget counseling;
- 7.12** Functional Features and Characteristics of efficient Local Area Grid Networks - appropriate mixes of commercial, residential, and industrial loads and auxiliary generating capacity;

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- 7.13 Human Resource Management for the future - Harnessing the knowledge, skill, judgment and creativity of the Utility's Human Capital and the enhancement of Workforce Productivity and Safety in the context of increasing automated operational and supervisory equipment and systems;
- 7.14 Industry-wide database systems to assess common equipment performance issues, failure mechanisms, and new equipment opportunities;
- 7.15 Innovation into energy efficiency;
- 7.16 Issues of "Misplaced or Split Incentives" as, for example, "in rental property where the landlord has no incentive to install energy saving retrofits in buildings where (the landlord) does not pay the utility bills";
- 7.17 Management of the Utility aging assets within the Business Plan;
- 7.18 Market Segmentation Forces;
- 7.19 Optimal Purchase obligations for Renewable Technologies - Installed Renewable Capacity or Renewable Electric Power Generation?
- 7.20 Pilot Studies in alternative Pricing Formulae for residential, micro and small private enterprise customers;
- 7.21 Probability Distributions and the Estimation of Uncertainty in Electric Utility Power Demand Forecasting in the short, medium and long terms;
- 7.22 Public purpose programmes that provide benefits to the community and which the Utility can legitimately be expected to be required to provide;
- 7.23 Quantification of the impact, including losses and Asset Management issues, resulting from constraints in funding;
- 7.24 Receptivity of Customer Groups to Energy Efficiency Incentives;
- 7.25 Regulatory mis-pricing, for whatever reasons;
- 7.26 Safety, Environmental and Health effects of transmission lines;
- 7.27 Selection of Optimal Opex and Capex Multiple-Year Project Portfolios within budget constraints;
- 7.28 Sensitivity Analyses, Scenario Planning and Decision Analyses as Decision Testing Tools for Electricity Utility Power Demand Forecasting under conditions of Uncertainty;
- 7.29 Simulation and Modeling for "Intelligent" Electricity Infrastructure;
- 7.30 Stochastic Process Models for representing Electric Load Uncertainty;
- 7.31 Systems for Management, Calibration, Validation and Mining of large datasets;
- 7.32 The development of multi-year Opex Plans, including the prioritization of Distribution investments and O&M projects;
- 7.33 The integration of customer-valued information into reliability planning, taking into account new and emerging customer segments;

8. Consumer Bill – Format

As a part of their electricity conservation efforts, some advanced Utilities place graphical and other similar diagrammatic information on the customer's bill. This information might be the graphical representation of consumption or monies due for the current billing period plus the past two periods. Others show comparisons between the billing for the present three billing periods compared to that for the same period during the previous year. This approach has been found to be an effective way to place greater control over the use of resources directly in the hands of the customer. It provides data to the Utility on customer behaviour and reaction towards electricity price. It is recommended for consideration by T&TEC.

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9. Database of Utility Recommended Energy Efficient Appliances and Products

In addition to the reservations expressed regarding implied or implicit liability for its involvement in this initiative, the question must be asked as to whether this practice would have any implication for Brand Development (“*The Power to Make it Work*”) by T&TEC.

The Utility Brand will be of increasing value within the Caribbean Single Market and Economy, as well as within the globalization of trade in services within the subregion and Latin America. The island of Grenada, for example, has found it valuable to advertise on television, the expert assistance provided to the Grenadian community by T&TEC in the aftermath of Hurricane Ivan two years ago.

The appliances and products presumably to be recommended, for example *EnergyStar*, *Efficient Magnetic Ballasts*, *High Efficiency Compressors* and *Super Efficient Refrigerators*, as good as they are, would have been developed for a metropolitan market and its associated utility regulatory regime, and imported by wholesale vendors for sale at a profit to the T&T consumer. Issues of the impact of the features of the import trade upon the local regulatory regime are separate topics not considered here. But that there is interaction between the two is clear.

Is there any potential conflict between the *Vision* of T&TEC and that of such trading entities? Is it likely, for instance, that vendor inventory practice would include the simultaneous displaying of poor-efficiency appliances alongside “recommended” goods? Is it possible that an uninformed consumer could be led to believe, perhaps by honest misunderstanding, that the procurement of T&TEC services is linked to the purchase of appliances from particular vendors?

The Utility has a vested interest in preserving its reputation as a provider of unbiased, site-specific technical information pursuant to the efficient and safe use of electrical energy. It is possible to reason that certification by the *Trinidad and Tobago Bureau of Standards* will introduce sufficient distance between the Utility, the Vendor and the Consumer to displace all incipient reservations in this regard about the T&TEC Brand.

In North American markets, the endorsement of appliances, products, and practices, is reportedly more being seen as “*an important means to reduce customers’ search costs, uncertainties regarding performance, and wariness regarding vendors’ energy performance claims*”.

10. Licenses

Does the Utility have licensees? If yes, in the context of regulatory control where applicable, what are the general and specific conditions that attach to those licenses, especially in relation to:

- 10.1** Regulatory approval for licence transfer or sale?
- 10.2** Supply of annual audited financial statements and RIC access to the licensee’s books and records?
- 10.3** RIC power to compel timely provision of information?
- 10.4** RIC inspection of premises of the licensee?

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11. Total Factor Productivity –v- Building Block Approach

In an earlier comment, I suggested that there might be merit in using Total Factor Productivity for analyses in this first regulatory period of five (5) years. The more I examine the frailties in the data presented by the Utility as described by the RIC and by the *Kenesjay Draft Final Report*, the more I am inclined to that view.

The main concern that remains is the uneasy status of the investment plans as submitted by the Utility, and the extent of the strictures that had advisedly to be made to them.

It is unclear from the documents presented how this might impact upon the inherited investment cycle that precedes regulation, especially due to factors such as depreciation rates. It is also unclear what adverse impacts, if any, might result in quality of service over the coming five years.

Neither the relative gaps in staff training nor the weaknesses in the data were obvious during the public consultations that preceded the preparation of the DD, effective and welcome though those meetings were.

The experience of the British Regulator, Ofgem, with the building block approach, and the growing popularity of the method internationally, must be respected. However, the unique nature of the local industry, the impositions upon the Utility of the existing fuel supply contracts, the impact of the other power generator, and the relative scarcity of comparable service providers, all give rise for pause.

The uncontrollability of the cost of fuel is admittedly a serious mitigating factor in favour of retaining the building block approach. The uncontrollability of costs decided upon by previous Utility Boards of Directors and Management is another similar factor.

A comforting consideration, however, is that the disallowed Capex Projects (DD, pages 136 – 138) do not now appear to place the Utility in a “cliff-edge investment position” due to the incidence of aging assets.

However the reported success of the Total Factor Productivity approach in diverse environments has to be noted.

12. Natural Disaster Preparedness Fund

With additional information in hand, it is necessary to restate previous reservations expressed about the establishment of this excellent and welcome initiative. A Chief Executive Officer of a Canadian Power Authority (*Jan Carr, CEO, Ontario Power Authority*) commented before a peer group on 2005 March 01 on the propensity for such Funds to attract political risk. Where the Fund has negative balances, he observed, it can delay or prevent progress on the implementation of new tariffs. Where, however, the Fund builds up a positive balance, such as in the case of the proposed Disaster Preparedness Fund, “*there is the temptation to use that positive balance for reasons other than what it was originally intended for.*”

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13. Some Technical Issues

Some technical issues arise after rereading the document, including the following:

- 13.1** Perhaps the **Utility** should be requested to distribute its **Glossary of Terms**. It has proven difficult to find where, for instance, Maintenance Costs for Line Rights-of-Way are considered, without a T&TEC definition of Distribution Costs. A Depreciation rate is given in the DD for land, and there would be a relationship; but that is as far as it is practical to go with the issue. Page 72 of the DD gives a definition of Opex; page 84 reflects on unsatisfactory utility presentation of Repair and Maintenance data; various tables such as Table 5.7 provide Distribution Costs.

Similarly, it would be useful to know whether the residual value of a depreciated asset, aged asset, or asset in use beyond its regulatory life, includes the cost of the dismantling and disposal of the asset.

- 13.2 Depreciation Rates of assets, page 150, Table 7.1** : While the intention of the RIC “*not to standardize depreciation profiles and economic life for particular asset classes*” is respected, it might be useful to observe that certain jurisdictions apply differing rates dependent upon the normal operating voltage and capacity of the asset. Higher voltage and higher capacity carry greater stringency than the lower voltage and capacity counterparts.

- 13.3 Measures of Service, pages 193 – 195** : Although they are provided elsewhere and are easily found in the technical literature, the DD should state clearly the position of certain events that generally receive particular treatment in the calculations for measurement of service. Some of these events are:

- 13.3.1** Imperatives of a State of National Emergency;
- 13.3.2** Interruptions caused by tropical storms, earthquakes, floods, or tsunamis;
- 13.3.3** Interruptions due to accidents that are not network/grid related;
- 13.3.4** Interruptions instituted at the request of the Fire Services Division for the safety of firemen and firefighting equipment to isolate areas affected by fire;
- 13.3.5** Planned interruptions;
- 13.3.6** Responding to illegal connections to the distribution system;
- 13.3.7** Unsafe or limited accessibility during nighttime;

14. References

A complete list of References used in the preparation of all three (3) sets of comments submitted is available as a separate document on request.