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Title of Paper

USING AN INNOVATIVE SPREADSHEET TOOL TO COMPARE METROPOLITAN MUNICIPAL TARIFFS AND ESKOM LARGE CUSTOMER TARIFFS, AS WELL AS THE EFFECT ON VARIOUS LOAD FACTORS

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INTRODUCTION

The purpose of this paper is informative by nature and is not meant to take a standpoint for, or against the different tariff structures used in municipalities, nor will it attempt to duplicate the good and hard work already done by the AMEU. The purpose is rather to point out the close relationship between the various large power user electricity tariffs, of Municipalities. It is also important to note that where a comparison of tariffs is displayed, these tables were compiled in an attempt to compare apples with apples on the same basis. Increases in tariffs, or tariff structural changes following the date of this paper, may not be reflected. In this paper the author basically used two group sets of actual large power user data which will form the basis of the presentation, as well as electricity purchases for the City of Ekurhuleni. The results of the data sets are then applied to the various municipalities to compare the possible revenues that will be generated.

For many years, the AMEU conducted an annual survey amongst a selection of municipal electricity distributors, Eskom and a Namibian utility, in order to attempt to establish a comparison of cost to a sample of domestic (four assumed levels of consumption) and demand related (30% and 60% load factors at four assumed demand levels) consumers, based on the electricity tariffs levied by these distributors.

As most of the electricity is purchased via Eskom, the tariff comparison also indicates the Eskom prices as reference. However, the Eskom prices may not be a fair reflection as these prices will not reflect all the additional costs to convert cost components from the transmission level to distribution level. The matter of cross-subsidisation between different groups of customers is one that will probably be a controversial issue on the table. The author is also of the view that future tariff re-design should be so balanced, that it prevents, as far as possible, the exploitation of tariffs by consumers. The tariff structures should encourage consumers who want to change, to take the effect of pricing signals into consideration.

Inclining Block Rate Tariffs (IBT)

One of the next big issues that will need more debate, relates to the NERSA proposed inclining block rate tariffs. At the NERSA public hearing for Municipalities, those applying for an average increase above the guideline of 19% and 22 % held on 3 June 2010, and from the well informed presentations, it was clear that there are concerns in this respect. From the issues raised the following are to be noted:-

- IBT issues were not debated during the NERSA hearings
- IBT proposals have been solely made by NERSA
- IBT proposals should not be done without the establishment of a subsidy framework

- Data is not readily available to enable Municipalities to do an accurate calculation of the revenue impact of the proposed IBT tariffs.
- The practical implication of applying IBT tariffs has not been considered.
- With manual processes, reading period of 3-5 week becomes very important.

One of the reasons for stating a point on the IBT tariff, is just to highlight bullet point 4: “Data not readily available”. The author has obtained sufficient data from the City of Ekurhuleni financial system to enable the extraction of meaningful data with the following standard Excel spreadsheet formulae worth noting:-

Standard Excel formulae’s used to extract IBT tariff data in spreadsheet according to the NERSA benchmarks and consumption levels

Ave kWh	Number
=SUMIFS(F2:F250000,F2:F250000,">0",F2:F250000,"<50")	**=COUNTIFS(F2:F250000,">0",F2:F250000,"<50")**
=SUMIFS(F2:F250000,F2:F250000,">=50",F2:F250000,"<350")	**=COUNTIFS(F2:F250000,">=50",F2:F250000,"<350")**
=SUMIFS(F2:F250000,F2:F250000,">=350",F2:F250000,"<600")	**=COUNTIFS(F2:F250000,">=350",F2:F250000,"<600")**
=SUMIFS(F2:F250000,F2:F250000,">=600",F2:F250000,"<60000")	**=COUNTIFS(F2:F250000,">=600",F2:F250000,"<60000")**

Sample of results obtained with abovementioned formulae.

Tariff	Alberton 2008/09	Ave kWh per month	Number of customers	Ave consumption per customer per month
ELBDOM	**=">=0","<50")/12**	**4,107**	**218**	19
ELBDOM	**=">=50","<350")/12**	**248,739**	**1,106**	225
ELBDOM	**=">=350","<600")/12**	**973,582**	**2,013**	484
ELBDOM	**=">=600","<6000")/12**	**14,746,245**	**10,723**	1375

The first row in the table indicates that a total of 218 customers used a combined value of 4107 kWh units per month. The average consumption for this group, therefore, is 19 kWh units per month. This may either be related to houses that are not occupied permanently or other reasons, e.g. tampering, faulty meters, etc.

From the results obtained, the City of Ekurhuleni was able to structure an IBT tariff, although the tariff levels at c/kWh had to be higher than the NERSA guideline in order to protect the City revenue stream.

Revenue Requirements

The starting point for a tariff study is to determine the fair revenue requirements of a municipality. The revenue requirements will then be calculated by applying the new increased tariffs by the forecasted various consumption quantities. Cognisance should be taken that the NERSA is in the process of considering the application of a new type of revenue requirement regulatory method. This may be similar to that applied by Eskom and is based on a return of assets methodology.

The completion of a cost of supply study is a complex undertaking. The objective is to establish what the costs are of supplying different types of customers at various points on the electricity network. It is made complex because of various factors and one of them to be mentioned is the “unpopular results” that may emanate.

EDI Holdings and REDS “Call for Reform”

For many years now it was highlighted that the current electricity distribution industry structure within South Africa does not further the Government social and economic development objectives. The South African electricity distribution industry is seen to be highly fragmented with electricity being provided to customers by Eskom and approximately 187 local authorities.

The Cabinet has recognised and responded to the need for reform by approving the Blueprint Report on EDI restructuring in February 2001, stipulating that the electricity distribution industry be restructured so that it is able to:-

1.) Provide low cost electricity to all customers
2.) Provide a reliable and high quality supply and service to all customers
3.) Operate in a financial and efficient manner.

One of the compelling reasons for the REDS restructuring drive was the disparity and lack of transparency in electricity tariffs in South Africa. Due to the difference in tariff structures and tariff levels to the end customers it is and will remain important to set up a strategy to move the different utilities towards cost reflective and standardised tariffs.

On 6 December 2000, the recommendations of the Municipal Demarcation Board came into effect where two or more municipalities were merged to form one. This process meant that some municipalities distributing electricity at lower prices may have merged with some doing so at higher prices. In the process, electricity prices were either increased or decreased.

Unfortunately it seems that not much has happened over the past years in standardizing electricity tariff structures. In fact, in comparing the number of different tariff structures, from 1985 until 2000, it may be concluded that the tariff schedules that were in place in municipalities have "grown" into their different forms over many years and are, in most cases, extremely complicated. A general characteristic of most of them was that they favour the domestic customer at the cost of the business and industrial ones.

Compliance to legislation and National Treasury circulars

This paragraph is not meant to provide an exhaustive list of legislative matters that need to be complied with. It is, however, necessary to highlight that tariffs need to be sustainable and need to be at a level which enable a municipality to meet its financial commitments.

The Local Government Municipal Systems Act (Act 32 of 2000) states, amongst other things, the following:

> 74.(2) A tariff policy must reflect at least the following principles, namely that –
> (a) .....
> (d) tariffs must reflect the costs reasonably associated with rendering the service, including capital, operating, maintenance, administration and replacement costs, and interest charges
> (e) tariffs must be set at levels that facilitate the financial sustainability of service, taking into account subsidization from sources other than the service concerned…

The Municipal Finance Management Act (Act 56 of 2003) states, amongst other things, the following:

> 135.(1) The primary responsibility to avoid, identify and resolve financial problems in a municipality rests with the municipality itself.
> (2) A municipality must meet its financial commitments.
> (3) If a municipality encounters serious financial problems or anticipates problems in meeting its financial commitments, it must immediately –
> (a) seek solutions for the problem;
> (b) notify the MEC for local government and the MEC for finance in the province, and
> (c) notify organized local government.

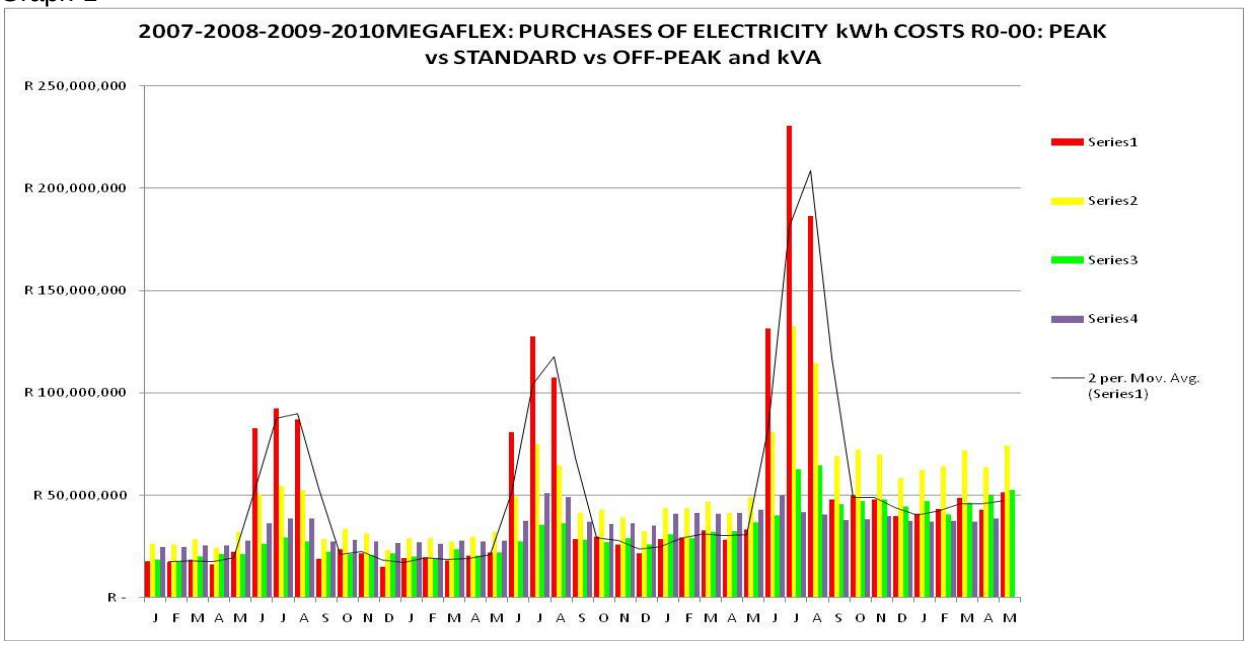
The National Treasury's Annexure to MFMA Circular No. 51, dated 23 March 2010, amongst other things, state the following:

> .. However, in their tariff applications to NERSA municipalities may motivate for higher increases, after considering all factors that impact on their electricity services, including:
>
> - ensuring a reasonable rate of return on electricity assets;
> - previous under- or over-recovery due to last year's increase being less than or greater than the actual 31,3 per cent increase;
> - the cost of capital expansion programmes and repairs and maintenance;
> - the labour (i.e. the wage agreements with unions) and other input costs or services provided by the municipality or entity;

- the need to ensure financial sustainability;
- local economic conditions, and
- the affordability of electricity services, taking into consideration the municipality's indigent policy.

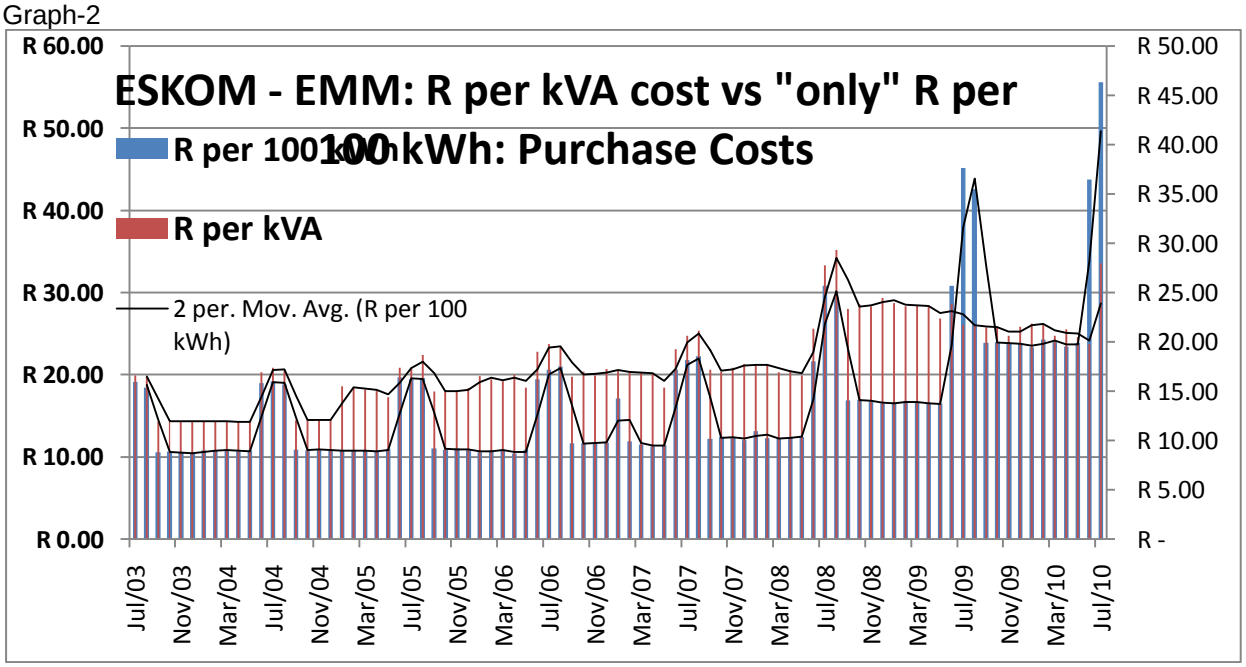
In the case of the City of Ekurhuleni it is clear from the Graph below that the total revenue generated by Eskom tariffs during the winter peak hour periods is at least twice as much as the standard time and at least four (4) times the cost of off peak or demand charges. This may also be the case at other municipalities and a clear signal in what direction municipal TOU tariffs should move.

Graph-1



Furthermore, if one analyses the City of Ekurhuleni electricity purchase cost from Eskom, which is made up from approximately 94% on the MegaFlex, 5% NightSave and 0.5% MiniFlex tariffs, over the last six years, it should be noted how sudden the impact of Eskom pricing signals have changed towards a much stronger emphasis on "energy" (kWh) rather than demand. This emphasis on "energy" also has to guide tariff designers and/or finance personnel in Municipalities towards new sets of tariffs and/or tariff structural changes.

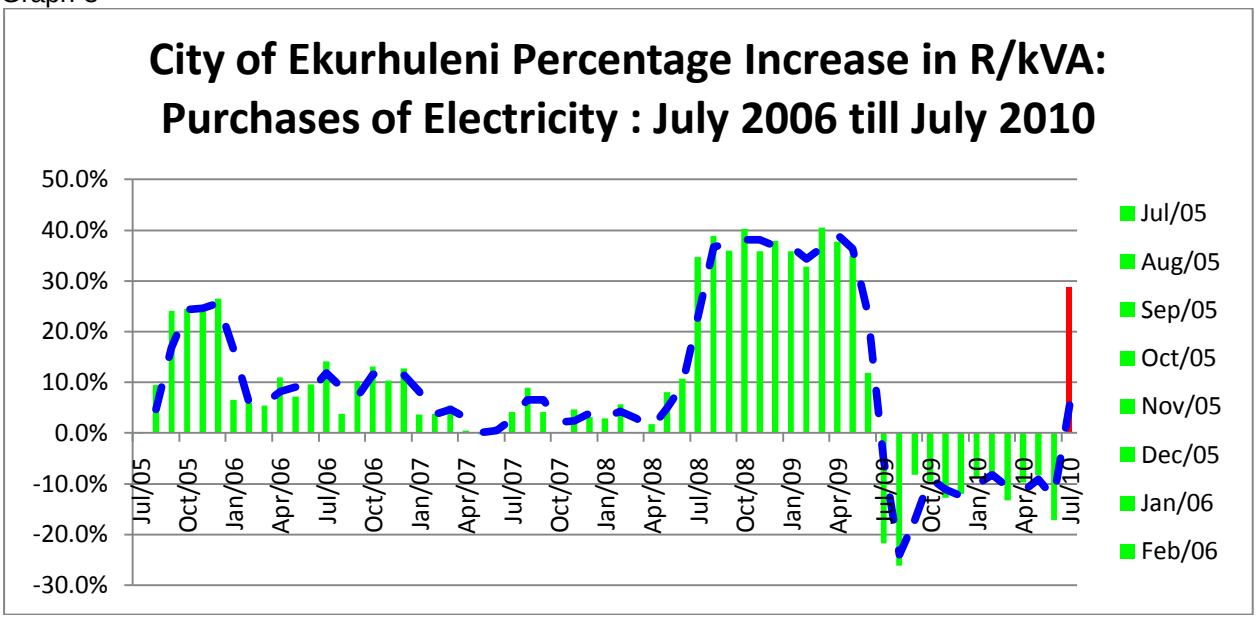
Graph-2



Graph-2 above clearly indicates that for the very first time in many years, the energy pricing signal per Rand value of 100 kWh vs the Rand value per kVA demand costs are higher than those of previous years. The data is based on the City of Ekurhuleni and indicates the stronger weight on energy for electricity purchased since July 2003 till June 2010. If this fact is missed and kWh and kVA costs are only increased by the same proportion as required by the normal revenue requirements, it may result in extremely skewed tariff signals which may have negative results on certain customers, once tariff rationalisation and standardisation are realised in the South Africa distribution sector.

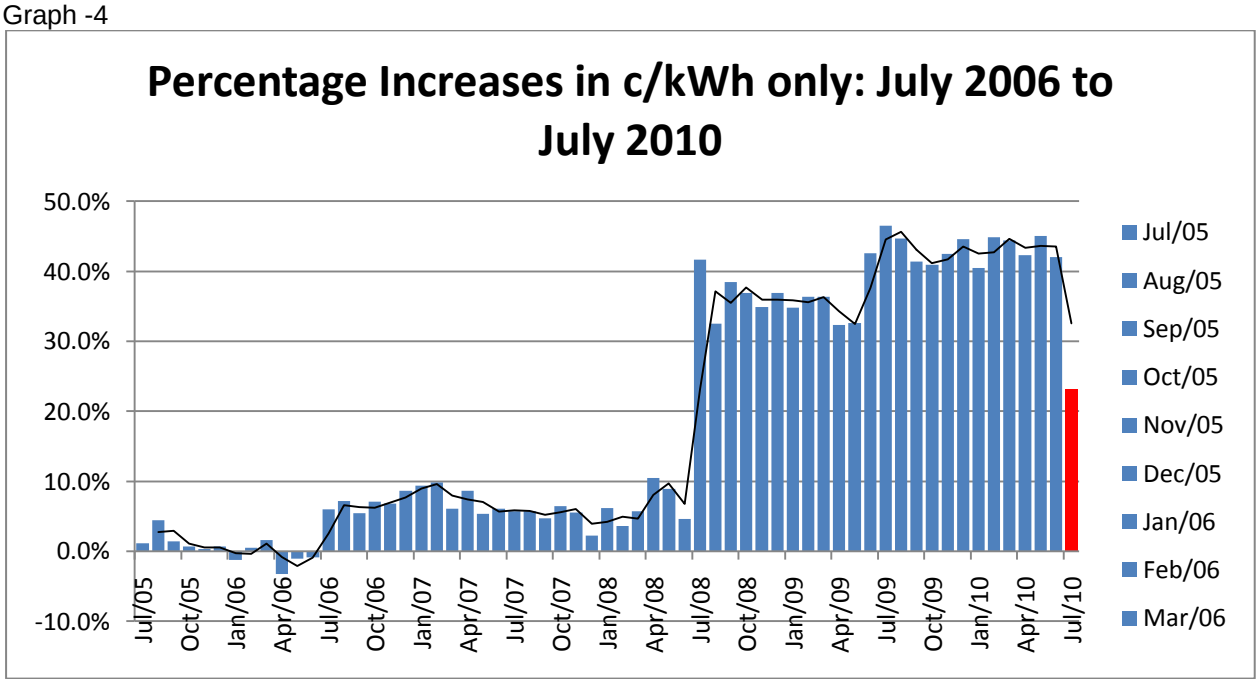
Graph -3 below green bars clearly indicate that for the period July 2009 till June 2010, in terms of percentage increases/decreases, that the demand (kVA) purchases cost for the City of Ekurhuleni actually decreased in comparison with the period July 2008 till June 2009. The red bar indicates a shift in emphasis towards demand (kVA) costs during the month July 2010.

Graph-3



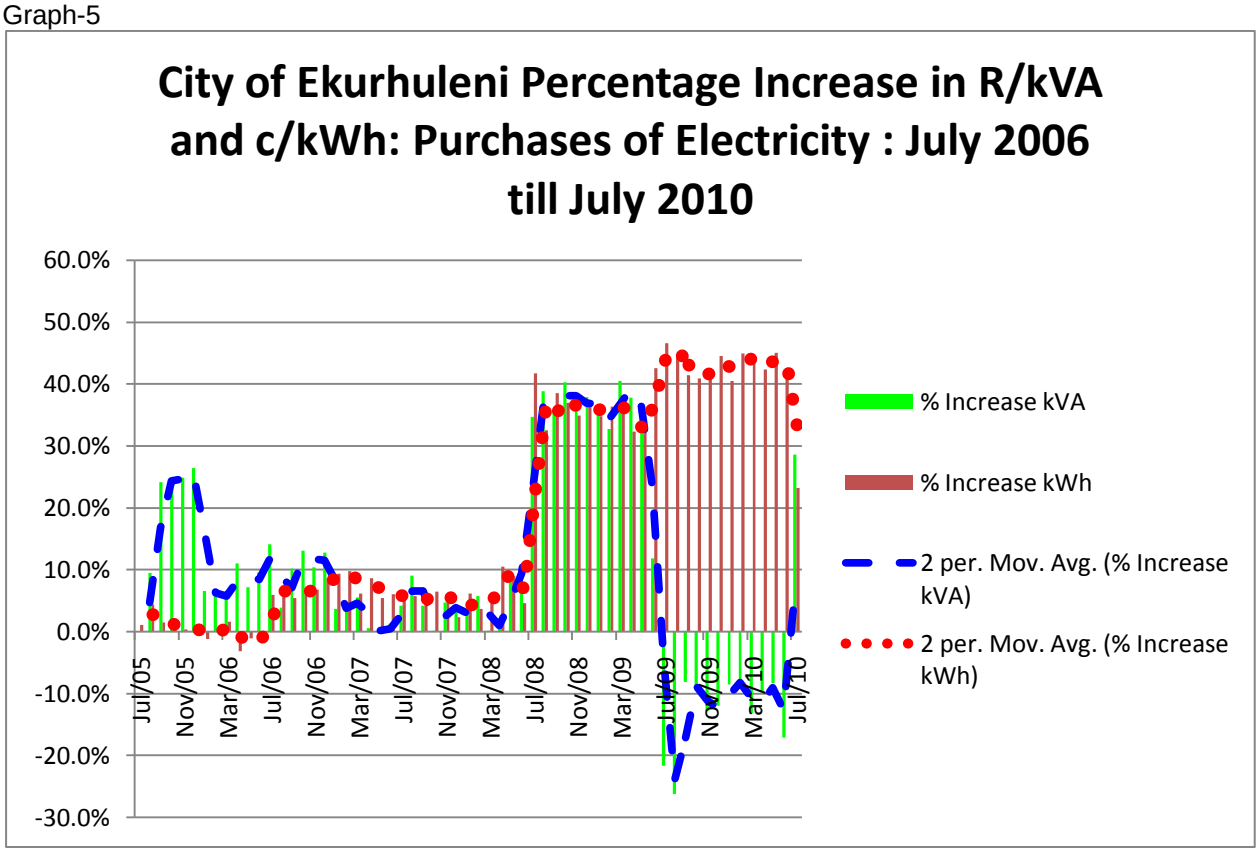
Graph -4 below clearly indicates for the period July 2009 till June 2010, in terms of percentage increases/decreases, the energy (kWh) purchases cost for the City of Ekurhuleni actually increased more than kVA cost and thus clearly indicates that there were higher emphasis placed on energy cost during 2009/10 than previous years. The red bar indicates a 23% increase for the current year July 2010.

Graph -4



Graph-5 below, is a combination of Graph-3 and Graph-4 and may depicts the difficulty that municipal tariff designers may experience due to unpredictable pricing signals over the past years. The last two bars clearly indicates that the pricing signals for demand (kVA) and energy (kWh) during 2010/11 now have again put more emphasis on kVA charges than kWh.

Graph-5



Graph-5

TARIFF COMPARISONS:

Only the following main categories of tariffs will be briefly compared and discussed in this paper:

EKURHULENI METROPOLITAN MUNICIPALITY 2009/10

1.) **Tariff C**: (kWh and kVA - demand tariff) and
2.) **Tariff D:** (TOU tariff > 100kVA)

CITY POWER OF JOHANNESBURG 2009/10

1.) **Large Customer Demand Tariff (Medium Voltage):** (kWh and kVA - demand tariff) and
2.) **Large Customer Time Of Use Tariff (Medium Voltage)**: (TOU tariff > 100kVA)

CITY OF TSHWANE METROPOLITAN MUNICIPALITY 2009/10

1.) **11kV Supply Scale Tariff:** (kWh and kVA - demand tariff) and
2.) **11kV Supply Scale Time Of Use Tariff** (TOU Tariff > 750 kVA)

eTHEKWINI ELECTRICITY TARIFFS 2009/10

1.) **OBSOLETE LARGE POWER USER TARIFF LV3:** (kWh and kVA - demand tariff) and
2.) **INDUSTRIAL TIME OF USE** (ITOU Tariff > 100 kVA)

NELSON MANDELA BAY MUNICIPALITY TARIFFS 2009/10

1.) **LARGE BUSINESS :** (kWh and kVA - demand tariff) and
2.) **LARGE BUSINESS 6 600 VOLT and ABOVE TOU**

ESKOM 2009/2010

1.) **NightSave Urban:** Supply voltage >500 V and <66kV, and Transmission surcharge 0% (kWh and kVA - demand tariff) and
2.) **MegaFlex** Supply voltage >500 V and <66kV, (TOU tariff > 1000kVA).

Comparative tariffs when benchmarking with other Cities

Two datasets were taken and the tariffs of each of the Cities indicated below were applied to these datasets. The results indicate the relevant position of the City of Ekurhuleni when benchmarked against these cities.

This is a theoretical exercise, however, it is clearly showing tariff levels for time-of-use customers (using an actual database of 550 customers) and demand tariff levels (using an actual database of 2 790 customers). However, it is important to note that whenever any Time-of-Use (TOU) tariffs are compared that one should use the exact same proportional units for Peak, Standard and Off-Peak periods.

Dataset-1

Base data for TOU tariffs: 550 Customers		
JUNE,JULY,AUGUST	% kWh	kWh
PEAK	16.1%	130,633,897
STANDARD	40.5%	327,754,878
OFF-PEAK	43.4%	351,860,618
SEPTEMBER TO MAY	% kWh	
PEAK	15.8%	402,386,421
STANDARD	40.0%	1,016,111,240
OFF-PEAK	44.2%	1,122,709,650
		kVA
JUNE,JULY,AUGUST (kVA)	Max.MD kVA	1,937,371
SEPTEMBER TO MAY (kVA)	Max.MD kVA	6,286,918

Table-1.1

	Incl VAT		Incl VAT	Percentage
	Eff. kWh Unit Cost	Total kWh	ACCOUNT TOTAL	v/s Eskom
EMM-TAR-D-2009/10	**R 0.56595**	**3,351,456,705**	**R 1,896,742,739.89**	**49.81%**
eThekwini-ITOU LPU-2009/10	R 0.50500	3,351,456,705	R 1,692,471,681.43	33.68%
TSHWANE-11kV TOU-D-2009/10	R 0.50614	3,351,456,705	R 1,696,304,121.48	33.98%
Cape Town Very LPU-TOU-2009/10	R 0.68680	3,351,456,705	R 2,301,787,833.69	81.80%
CITY POWER-TOU- 2009/10	R 0.66511	3,339,183,469	R 2,220,932,717.73	76.06%
NM Metro (PE) -TOU-2009/10	R 0.58767	3,351,456,705	R 1,969,555,919.92	55.56%
Average	**R 0.58611**		**R 1,962,965,835.69**	**55.15%**

However, if the data in the table above is further analysed and broken down into the two main cost components that affect electricity purchases from Eskom and are then ranked in terms of the “energy” costs, e.g. R/100 kWh, the City of Ekurhuleni will be in the number one (1) position, as indicated in the table below and highlighted in yellow, which is the best position to be in.

Table-1.2

	kWh R-00 Cost	kWh	R/100 kWh	kVA R-00 Cost	kVA	R/ kVA	Relative Energy Ranking to other Cities: 1 Best; 6 Worst based on R/100kWh
TSHWANE-11kV TOU-D-2009/10	R 750,557,019	3,351,456,705	22.39	R 732,866,407	8,224,289	89.11	6
eThekwini-ITOU LPU-2009/10	R 979,481,124	3,351,456,705	29.23	R 493,833,200	8,224,289	60.05	5
Cape Town Very LPU-TOU-2009/10	R 1,080,249,147	3,351,456,705	32.23	R 312,522,988	8,224,289	38.00	4
NM Metro (PE) -TOU-2009/10	R 1,150,068,749	3,351,456,705	34.32	R 571,176,882	8,224,289	69.45	3
CITY POWER-TOU- 2009/10	R 1,270,215,795	3,339,183,469	38.04	R 631,107,631	8,171,533	77.23	2
EMM-TAR-D-2009/10	R 1,339,390,815	3,351,456,705	39.96	R 319,138,606	8,224,289	38.80	1
Average							
ESKOM MegaFlex 500V to 66kV-2009/10	R 944,218,465	3,351,456,705	28.17	R 152,478,321	8,224,289	18.54	

Dataset-2

Base data (typical kWh & kVA Tariffs): 2790 Customers					
Winter kWh	Winter KVA	Summer kWh	Summer kVA	Total kWh	Total kVA
581,242,830	1,728,075	1,531,646,482	4,866,436	2,112,889,312	6,594,511

Table -2.1

	Incl VAT		Incl VAT	Percentage
	Eff. kWh Unit Cost	Total kWh	ACCOUNT TOTAL	v/s Eskom
EMM-TAR-C-2009/2010	**R 0.7324**	**2,112,889,312**	**R 1,547,495,099.22**	**66.68%**
eThekwini "Obsolete"-TAR-C-2009/2010	R 0.7531	2,112,889,312	R 1,591,133,642.25	71.38%
Tshwane -11kV Supply Scale TAR-C-2009/2010	R 0.6220	2,112,889,312	R 1,314,121,410.30	41.54%
Cape Town LPU TAR-C-2009/2010	R 0.6681	2,112,889,312	R 1,411,665,858.95	52.05%
CITY POWER MV LPU TAR-C-2009/2010	R 0.8097	2,136,453,979	R 1,729,988,756.40	84.28%
NM Metro (PE) Tar C-2009/2010	R 0.6863	2,112,889,312	R 1,450,085,028.82	56.18%
Average	**R 0.71193**		**R 1,507,414,965.99**	**62.02%**

However, if the data in table -2.1 above is further analysed and broken down into the main two cost components affecting electricity purchases from Eskom and are then ranked in terms of the “energy” costs, e.g. R/100 kWh, Nelson Mandela Bay Municipality will receive the number one (1) ranking and the City of Ekurhuleni will be ranked number four (4), as indicated in table-2.2 below and highlighted in yellow.

Table-2.2

	kWh R-00 Cost	kWh	R/100 kWh	kVA R-00 Cost	kVA	R/ kVA	Relative Energy Ranking to other Cities: 1 Best; 6 Worst based on R/100kWh
Tshwane -11kV Supply Scale TAR-C-2009/2010	R 541,956,109	2,112,889,312	25.65	R 587,636,912	6,594,511	89.11	6
eThekwini "Obsolete"-TAR-C-2009/2010	R 561,227,772	2,112,889,312	26.56	R 819,329,795	6,594,511	124.24	5
EMM-TAR-C-2009/2010	R 618,315,898	2,112,889,312	29.26	R 705,229,871	6,594,511	106.94	4
Cape Town LPU TAR-C-2009/2010	R 641,895,773	2,112,889,312	30.38	R 596,407,612	6,594,511	90.44	3
CITY POWER MV LPU TAR-C-2009/2010	R 776,163,589	2,136,453,979	36.33	R 688,597,223	6,629,821	103.86	2
NM Metro (PE) Tar C-2009/2010	R 773,211,844	2,112,889,312	36.60	R 457,988,818	6,594,511	69.45	1
Average							
ESKOM-N/S Urban -2009/2010	R 508,640,943	2,112,889,312	24.07	R 305,786,383	6,594,511	46.37	

Based on the results in table-2.2 and the higher emphasis on energy costs purchased from Eskom, the Ekurhuleni three part tariff, (Fixed, kWh and kVA), the kVA component has been decreased as follows for the 2010-2011 year to put more emphasis on higher cost of energy:-

Ekurhuleni Tariff C: Demand Charge (Rand/kVA)	
C.2. A **demand charge**, per kVA registered, per month, per point of supply:	
C.2.1. High Demand Season (June, July and	C.2.2. Low Demand Season (September to May)

August)							
Voltage		2009-2010	**2010-2011**	Voltage		2009-2010	**2010-2011**
C.2.1.1.	230/400 V	**R 111.16**	**R67.20**	C.2.2.1.	230/400 V	**R 91.84**	**R56.00**
C.2.1.2. See note 2	230/400 V, direct from substation	**R 109.18**	**R66.00**	C.2.2.2. See note 2	230/400 V, direct from substation	**R 90.20**	**R55.00**
C.2.1.3.	>230/400 V & < = 11kV	**R 107.19**	**R64.80**	C.2.2.3.	>230/400 V & < = 11kV	**R 88.56**	**R54.00**

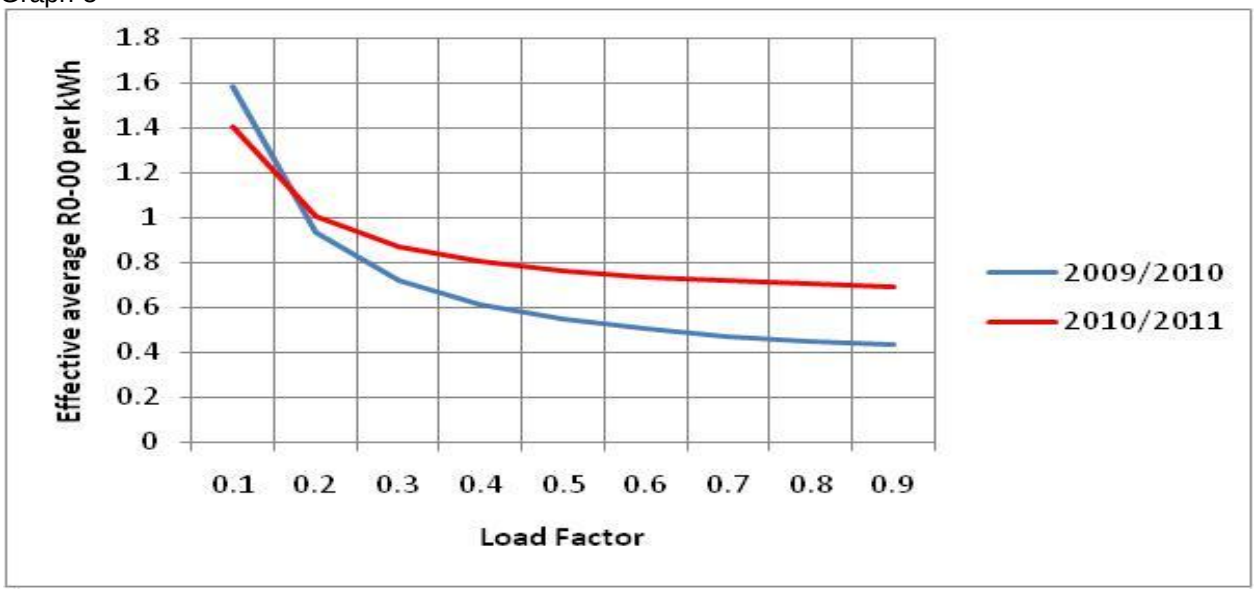
And the c/kWh energy component have been increased as follows for the 2010-2011 year to reflect this higher cost towards energy:-

Ekurhuleni Tariff C: Energy Charge (c/kWh)							
C.3. An energy charge, per kWh consumed:							
C.3.1. High Demand Season (June, July and August)				C.3.2. Low Demand Season (September to May)			
Voltage		2009-2010	**2010-2011**	Voltage		2009-2010	**2010-2011**
C.3.1.1.	230/400 V	**41.55**	**89.60**	C.3.2.1.	230/400 V	**26.1**	**53.80**
C.3.1.2. See note 2	230/400 V, direct from substation	**40.8**	**88.00**	C.3.2.2. See note 2	230/400 V, direct from substation	**25.6**	**52.80**
C.3.1.3.	>230/400 V & < = 11kV	**40.07**	**86.40**	C.3.2.3.	>230/400 V & < = 11kV	**25.16**	**51.80**

Note:- the much higher than normal price increase in c/kWh during 2010/2011 compared with 2009/2010

The effect of re-balancing the Ekurhuleni Tariff C, to place higher emphasis on energy and decrease the cost on kVA, is depicted below in graph 5. The red line clearly indicates that the lower load factor customer will benefit in that they will experience a lower than normal increase and at an extreme low load factor may even benefit more. On the other end, the higher load factor customers will experience a higher than normal increase when more emphasis is placed on energy (kWh) charges relative to demand (kVA) charges.

Graph-5



Note Possible temporary special conditions may be put in place for high load customers who will experience a higher than normal increase e.g. a rebate, based on the merits of each case. The rebate will only be valid for the current financial year.
The rebate will be applicable to the current financial year for a maximum of 2 months

preceding the month in which application is made. Spreadsheets providing substantial proof, using valid and similar consumption values on both the previous and new tariffs, to be attached to the application.
Excample of rebate to apply.

Increase of 40% to 44,9%	Rebate of 5%
Increase of 45% to 49,9%	Rebate of 7,5%
Increase of 50% and higher	Rebate of 10%

Theoretically, should other municipalities add 30% to the normal required percentage increases to their tariffs for 2010/2011, and not do as Ekurhuleni have done, e.g. increase energy c/kWh price and decrease R/kVA prices, Ekurhuleni Tariff C may relatively well be placed in the number one position regarding the weighted energy price component to its customer's on this tariff structure.

Theoretical exercise to prove how a Municipality may be in the number one position with more emphasis on energy charges assume EMM restructure tariff and others only add say 30% to both kWh and kVA charges	kWh R-00 Cost	kWh	**R/100 kWh Ekurhuleni 2010/2011 higher emphasis on Energy**	kVA R-00 Cost	kVA	R/ kVA	Relative Energy Ranking to other Cities: 1 Best; 6 Worst based on R/100kWh
Tshwane -11kV Supply Scale TAR-C-2009/2010	R 704,542,941	2,112,889,312	33.35	R 587,636,912	6,594,511	115.843	6
eThekwini "Obsolete"-TAR-C-2009/2010	R 729,596,103	2,112,889,312	34.53	R 819,329,795	6,594,511	161.52	5
Cape Town LPU TAR-C-2009/2010	R 834,464,505	2,112,889,312	39.49	R 596,407,612	6,594,511	117.572	4
CITY POWER MV LPU TAR-C-2009/2010	R 1,009,012,666	2,136,453,979	47.23	R 688,597,223	6,629,821	135.02	3
NM Metro (PE) Tar C-2009/2010	R 1,005,175,397	2,112,889,312	47.57	R 457,988,818	6,594,511	90.29	2
EMM-TAR-C-2009/2010	R 1,295,586,683	2,112,889,312	61.32	R 374,766,826	6,594,511	56.83	1
Average							
ESKOM-N/S Urban -2009/2010	R 661,233,226	2,112,889,312	31.30	R 397,522,298	6,594,511	60.28	

From the issues raised at the NERSA public hearing is was clear that many role players in the distribution industry are well informed on the socio economical issues as well as maintenance and future refurbishment challenges we are faced with. To name a view issues raised:-

- Percentage funding of operational budget normally allocated for maintenance now gets distorted due to the high percentage increases of purchases of electricity even if it is substantially increased.
- Over recovery in one year tariffs instead of using it to "claw-back" that it are rather used to assist in funding the next year capital projects.
- That the negative growth in the economy be express in the budget preparations as a negative value that represents "Income for Gone".
- Revenue is under pressure due to increase levels of customers defaulting on services payment, as well as increased levels of tampering.
- Critical skills shortages.
- What is the correct level of cross subsidization? Are we moving in the right direction?
- Rate payers -War on Waste (WoW)

HISTORICAL DEVELOPMENTS OF TARIFFS

The first commercial tariff was derived by Thomas Edison in 1882, that is, eight years before electricity was introduced in South Africa in Kimberley. This was a flat-rate tariff which persisted for many years. Electricity during the early years was used for only part of the day, outside this, the generating facilities were idle. It was not long, however, before industrial and motive power was found to take up some of the unused capacity during daytime.

The fact that the same plant was used for different consumers at different times of each day presented a cost-allocation problem, that is, the electricity became diverse. The origin of a new costing philosophy for designing a tariff for time-of-the-day customers can be traced to 1882 when an electrical engineer, Dr John Hopkinson proposed the division into two sets of costs of supplying the customer with electricity:-

1.) The "running costs" which he regarded as those incurred in the actual operation of the plant.
2.) The "standing costs" which he called the cost relating to the readiness to supply electrical energy.

The cost to the customer for the first (1) service is entirely dependent on the amount of energy (kWh) consumed (variable cost), while the cost to the customer for the second (2) service is fixed in the short term in that it is not dependent on whether that particular consumer purchases energy (a fixed cost). The fixed cost is largely dependent on the cost of necessary generation, transmission and distribution equipment. These costs are, in turn, influenced by the kVA capacity of the plant equipment, and hence, it is reasonable to specify the fixed costs per unit of electrical capacity (kVA).

RRM IMPLEMENTATION GUIDANCE FOR MUNICIPAL ELECTRICITY BUSINESSES

The purpose of the Regulatory Reporting Manual (RRM) implementation guidance is to highlight only (but not all) those significant areas where there are differences in accounting calculations between the Standards of Generally Recognised Accounting Practice (GRAP) framework and the Regulatory Reporting Manuals (RRMs) requirements prescribed by NERSA for the Electricity Distribution business.

This guidance is organized in two parts. The first part comprises of this high level summary of the significant areas of the differences and suggested resolution of the differences. The second part is the main body that contains this guidance that contains an introduction for context and then a more detailed comparative table pin-pointing: areas of significant divergence; the GRAP framework provision, RRM prescription and a resolution that envisages building from the GRAP framework financials to RRM regulatory financial reports.

The RRM Cost Allocation Manual (CAM) outlines the expected principal features of a Cost Allocation Manual. It will also enable regulatory department analyst to evaluate in a systematic manner the CAM submitted by licensees to NERSA. The Cost Allocation Manual can ensures that more direct cost assignments are made and should ensure that separation and no cross-subsidization occurs between regulated and non-regulated lines of businesses. It will also assist a licensee to identify areas of weakness in its Cost Allocation.

In theory, the calculated revenue requirement of a municipal distributor should be divided by the projected volumes of electricity sold, in order to produce the average price to be charged per unit sold to its customers to recover the required revenue.

Challenges of the Rate of Return (RoR) methodology:-

- How the methodology should be implemented
- The differences between current revenues from different customer classes and the calculated revenue requirements per customer class, per municipality.
- The approach NERSA needs to follow when introducing RoR method of regulation.

By applying the rules for qualifying expenses contained in NERSA's regulatory framework and the RRM, an exercise conducted at a metropolitan municipality that has undergone the EDI Holdings ringfencing exercise will assist a long way to learn from the results.

The broad categories of fixed and variable expenditure data to be gathered include energy purchases, operating and maintenance costs, customer service costs, other overhead costs, depreciation on assets, bad debts and revenue from other sources.

LOAD FACTOR

It is important to understand how the Load Factor impacts on the various tariffs used in any tariff structure and the effect on a customer electricity bill. When more emphasis is placed on "energy" prices, a higher than average increase will be seen by higher load factor customers. When tariff re-balancing is required the average load factor and the tariffs need to be modeled around this point.

One should therefore also understand that high load factor customers, who in the past were perceived to use electricity efficiently, are no longer the most optimal customers as they consume large quantities in the high priced season and periods. In fact, the City of Ekurhuleni 2010/2011 electricity tariff increases on lower load factor customers may have an effect that they will probably experience that the percentage increase on their accounts are more favourable towards them than towards high load factor customers.

MUNICIPAL TARIFF COMPARISON WITH PROFILE DATA

The author developed an innovative set of spreadsheets to simultaneously calculate 10 different electricity tariff accounts for various Metros, e.g Ekurhuleni, City Power, Tshwane, Nelson Mandela Bay, eThekwini and Eskom and will demonstrate its application.

The author wishes to enhance Municipal Tariff comparisons through the application of the spreadsheet in order to assist members of the AMEU in interpreting the results with exactly the same data. In generating

bills from the same sets of data, it is hoped to enable the AMEU members to ensure that customer bills are more fairly and accurately compared, as far as practicable possible.

However, it is to be noted that it is not advisable to make use of a spreadsheet application, as it is not the correct tool/platform in which to generate actual bills. Intensive knowledge and skills will be required to take all variables into account with such an application to generate accurate accounts. Although this may assist in checking data it is not recommended to be further used than this purpose by inexperienced /untrained users.

At least, spreadsheet applications is viewed by the author as the best way to analyse the impact of current and future tariffs and what the impact will be on customer accounts.

Conclusion

It must be noted that Electricity related revenue is under pressure due to increased levels of customers defaulting on services payment, as well as increased levels of meter tampering. Although processes are in place to cope with these challenges, and more processes are being put in place, the negative effects associated with the current poor economic conditions, are bound to persist for most municipalities.

A large scale loss in jobs creates further difficulties for Municipalities. It may be assumed that most jobs lost belonged to Municipal residents, who are then no longer able to pay for municipal services, hence start defaulting on payments.

Municipalities, therefore, does not only lose the sales to the industrial customer, but also the income from the residential customer (who still uses the services, but now without paying and by means of illegal reconnection).

It is a fact that our fossil fuels, the prime source of our power, are running out. The cost of energy, coal, as the demand rises and the basic resources decrease, will continue to rise. We have a serious responsibility to ourselves and to our future generation to manage this commodity wisely and effectively

Developing new electricity tariffs and standardization processes based on NERSA guidelines will have to consider the following:-

- Tariff increases should be stable, gradual and predictable.
- Tariffs should be as cost-reflective as possible.
- Tariffs should be affordable to all customer categories.
- Account should be taken of revenue neutrality principles.
- In accordance with the NERSA directive only one price increase is allowed per year.
- Tariff adjustment should be done in accordance with the recommendations and policies described in the Interim National Distribution Tariff System guideline issued by the NERSA in 1995.

In terms of the Electricity Amendment Act 1994, any changes to the tariff levels or tariff structures are subject to approval of the NERSA before they are applied to any end-user.

Reality is that some will win and some will lose. It just seems that all of us will have to work together to achieve realistic goals where everybody share and carry some load. I am confident that if we work together by openly sharing and debating information real progress can easily be made through the AMEU(SA) and its tariff committee.

Anyway, the intention of this year's Convention theme is for members and stakeholders to share problems and be able to openly discuss the impact and possible solutions to the many challenges municipalities are facing in areas such as the effect of bulk purchase tariff increase on setting municipal tariffs, and others.

The total Eskom increases in the price of bulk electricity will in most municipalities result in a 28,9% increase as from 01 July 2010, valid until 30 June 2011. Vulnerable customers are to be protected from the high increases, in line with NERSA instructions.

To reduce financial risk to Municipalities, some future tariffs may need to be re-balanced to reflect the Eskom higher emphasis on "energy", rather than on demand. One will also have to keep a close eye on when this emphasis may be change again towards demand costs in future.

The future economic regulation of the electricity distribution industry could be made easier through a standardised method of allocating the revenue requirements and related tariff calculations by means of applying the principles in the RRM and when the RoR methodology is applied.

In all instances, tariffs should be, uncomplicated, understandable, acceptable by the customer, feasible in application and interpretation, effective to yield the total revenue requirement, stable from year to year, fair in apportioning cost amongst customers and promote efficient use of energy.

Note:-The author & presenter wants to make it clear that the content, discussions, comments or views included in/on this paper do not necessarily represent the position or views of Ekurhuleni Metropolitan Municipality.

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