

Revenue Loss Indications after Phase Two Completion of Electricity Ringfencing Projects of Municipal Electricity Entities within South Africa Bv Frank Hinda & Deon Louw

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BACKGROUND TO RINGFENCING PROJECTS



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Ringfencing Electricity from the Rest of the Municipal Services







Ringfencing Electricity from the Rest of the Municipal Services





Electricity Business Ringfencing within Municipalities



- Ringfencing Project
 fundamentally based on three
 pillars in which the electricity
 business need to be separated
 from the parent business
 - Financial
 - Operational
 - Human Resources
- The ringfencing is needed to understand the isolated electricity business and effect this would have on the main business
- In this report only the Revenue Losses and Energy Losses component of the ringfencing exercise results will be discussed



Background to Municipalities Analysed



- Originally 28 municipalities were analysed
- Currently a further 8 municipalities have been partially analysed but only 6 rendered comparable data.
- Names of municipalities have been omitted for data confidentiality reasons
- Note that the picture obtained may not necessarily paint a proper picture for all of the distributing municipalities. The sample of municipalities analysed may not perfectly represent South Africa
- Data may be skewed due to metering date anomalies, large installations of pre-payment meters or similar events.





TOTAL NUMBER OF DISTRIBUTION MUNICIPALITIES IN REDs IN SA

Туре	RED ONE	RED TWO	RED THREE	RED FOUR	RED FIVE	RED SIX	TOTAL	% of Total
1 Metro	1	1	1	1	1	1	6	3.3
2	0	1	1	2	1	0	5	2.8
3	0	0	0	1	2	3	6	3.3
4	10	6	3	3	5	9	36	19.9
5	13	14	13	5	10	13	68	37.6
6 Smallest Municipality	14	14	8	8	8	8	60	33.1
Total	38	36	26	20	27	34	181	100



Ringfencing Sample					
Туре	Quantity	% of Total			
1	1	2.7			
2	2	5.4			
3	3	8.1			
4	15	40.5			
5	12	32.4			
6	4	10.8			
Total	37	100			









Total Municipalities vs Ringfenced Projects Analysed

Municipality Type





REVENUE MANAGEMENT ANALYSIS





Municipality	Туре	Ringfenced Revenue	Ringfenced Expenditure	Surplus as a % of Revenue
28	1	R 1,377,741,569	R 1,253,616,035	9.01
30	2	R 619,106,844	R 534,630,316	13.64
35	2	R 191,081,540	R 126,686,852	33.70
1	3	R 226,251,133	R 245,045,253	-8.31
4	3	R 171,209,133	R 158,999,419	7.13
25	3	R 540,689,314	R 470,738,309	12.94
3	4	R 157,211,657	R 171,854,267	-9.31
7	4	R 199,014,533	R 152,114,950	23.57
8	4	R 125,973,096	R 107,645,197	14.55
13	4	R 96,189,170	R 93,404,875	2.89
19	4	R 182,223,916	R 142,793,668	21.64
20	4	R 72,535,237	R 65,771,498	9.32
22	4	R 79,081,910	R 73,078,009	7.59
26	4	R 76,322,637	R 64,914,116	14.95
27	4	R 140,999,913	R 125,937,168	10.68
31	4	R 93,682,237	R 85,927,229	8.28
32	4	R 155,061,979	R 114,490,263	26.16
34	4	R 95,840,402	R 89,838,937	6.26
36	4	R 162,820,122	R 153,083,816	5.98
40	4	R 98,772,703	R 75,295,624	23.77
41	4	R 62,971,352	R 53,915,677	14.38
2	5	R 22,566,163	R 24,698,050	-9.45
5	5	R 33,460,044	R 25,709,073	23.16
6	5	R 16,884,112	R 16,016,778	5.14
9	5	R 28,786,026	R 21,605,907	24.94
11	5	R 34,976,040	R 33,282,928	4.84
12	5	R 37,531,477	R 26,291,837	29.95
14	5	R 86,280,718	R 70,849,412	17.88
15	5	R 26,931,093	R 21,264,933	21.04
18	5	R 45,257,552	R 40,873,300	9.69
23	5	R 16,682,574	R 14,555,266	12.75
24	5	R 4,433,212	R 4,290,388	3.22
29	5	R 27,143,110	R 21,991,550	18.98
10	6	R 13,280,713	R 11,624,078	12.47
17	6	R 10,468,013	R 9,523,287	9.02
21	6	R 10,013,235	R 8,006,536	20.04
33	6	R 5,220,743	R 7,068,624	-35.39
Total		R5,344,695,222	R4,717,433,425	11.74



Income vs Expenditure

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Millions









Municipal Debtor Day Spread – Minimum to Maximum





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Municipal Tariff Regime





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DISTRIBUTION LOSS ANALYSIS



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Typical MV Technical Losses for the "Average Utility" from Various Countries



Nr	Country	% Losses
1	New Zealand	6.8%
2	India	7 – 8%
3	Brazil	6.5%
4	Chile	6.5%
5	Developing Countries	10 - 15%
7	EDI Holdings South Africa	7%

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Municipality	Туре	kWh Purchased 07/08	kWh Sold 07/08	Losses kWh	Annual losses (%) 08
28	1	3 641 262 000	3 431 043 442	210 218 558	5.77%
30	2	2 276 328 854	2 074 277 130	202 051 724	8.88%
35	2	81 736 852	75 403 000	6 333 852	7.75%
1	3	843 525 816	660 140 106	183 385 710	21.74%
4	3	530 135 681	456 379 632	73 756 049	13.91%
3	4	409 540 703	357 357 064	52 183 639	12.74%
7	4	758 159 299	721 104 000	37 055 299	4.89%
13	4	66 694 303	60 691 816	6 002 487	9.00%
19	4	417 486 830	407 308 595	10 178 235	2.44%
20	4	193 318 348	163 659 183	29 659 165	15.34%
22	4	180 661 000	141 547 986	39 113 014	21.65%
26	4	<u> </u>	189 948 850	28 274 203	12.96%
27	4	339 782 376	307 976 457	31 805 919	9.36%
31	4	245 281 761	243 272 562	2 009 199	0.82%
32	4	449 642 599	389 823 553	59 819 046	13.30%
34	4	224 147 122	196 657 746	27 489 376	12.26%
36	4	387 685 000	353 403 000	34 282 000	8.84%
40	4	275 796 711	240 454 331	35 342 380	12.81%
41	4	168 411 947	121 392 557	47 019 390	27.92%
2	5	61 474 596	54 006 499	7 468 097	12.15%
5	5	80 001 113	63 618 052	16 383 061	20.48%
6	5	52 167 527	35 277 010	16 890 517	32.38%
9	5	81 736 852	75 403 000	6 333 852	7.75%
11	5	100 309 538	91 571 921	8 737 617	8.71%
12	5	60 365 805	49 317 040	11 048 765	18.30%
14	5	193 992 927	165 121 330	28 871 597	14.88%
15	5	33 757 364	30 345 000	3 412 364	10.11%
18	5	92 154 766	67 307 205	24 847 561	26.96%
23	5	44 489 183	35 034 368	9 454 815	21.25%
24	5	9 823 862	8 888 203	935 659	9.52%
29	5	70 016 449	62 840 486	7 175 963	10.25%
16	6	32 084 000	28 455 000	3 629 000	11.31%
21	6	24 494 936	17 863 922	6 631 014	27.07%
33	6	11 510 500	6 780 784	4 729 716	41.09%
Total		12 656 199 673	11 383 670 830	1 272 528 843	10.05

Total electricity revenue vs Total electricity expenditure



	Electricty Revenue (R) vs Electricity Expenditure (E)	Municipal -ity	Ringfeneced Revenue	Ringfeneced Expenditure	Surplus as a % of
Millions		20	D 1 277 741 560	D 1 252 616 025	Revenue
		20	R 619 106 844	R 534 630 316	9.01
1 400		35	R 191 081 540	R 126 686 852	33 70
1400		1	R 226 251 133	R 245 045 253	-8.31
		4	R 171.209.133	R 158,999,419	7.13
		25	R 540.689.314	R 470.738.309	12.94
1 200		3	R 157,211,657	R 171,854,267	-9.31
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		8	R 125,973,096	R 107,645,197	14.55
1 000		13	R 96,189,170	R 93,404,875	2.89
		19	R 182,223,916	R 142,793,668	21.64
		20	R 72,535,237	R 65,771,498	9.32
800		22	R 79,081,910	R 73,078,009	7.59
		26	R 76,322,637	R 64,914,116	14.95
		27	R 140,999,913	R 125,937,168	10.68
c00		31	R 93,682,237	R 85,927,229	8.28
600 -		32	R 155,061,979	R 114,490,263	26.16
		34	R 95,840,402	R 89,838,937	6.26
		36	R 162,820,122	<u>R 153,083,816</u>	5.98
400		40	R 98,772,703	<u>R 75,295,624</u>	23.77
		41	R 62,971,352	R 53,915,677	14.38
		 	R 22,500,103	R 24,698,050	-9.45
200		5	R 33,400,044	R 25,709,073	<u> </u>
	i hilling an hala a		D 28 786 026	P 21 605 007	24.04
			R 20,700,020	P 33 282 028	<u> </u>
_		12	R 37 531 477	R 26 291 837	29.95
0		14	R 86 280 718	R 70 849 412	17.88
20	35 4 5 6 79 71 71 31 30 61 5 9 71 75 75 79 71 35	15	R 26.931.093	R 21.264.933	21.04
	Munic #	18	R 45.257.552	R 40.873.300	9.69
Ringfeneced Revenue Ringfeneced Expenditure		23	R 16,682,574	R 14,555,266	12.75
		24	R 4,433,212	R 4,290,388	3.22
			R 27,143,110	R 21,991,550	18.98
		10	R 13,280,713	R 11,624,078	12.47
			R 10,468,013	R 9,523,287	9.02
30 July 2010		21	R 10,013,235	R 8,006,536	20.04
				R 7,068,624	-35.39

The average annual distribution loss (Technical + Non-Technical) is ≈ 14.55%

Electricity Purchased (kWh) vs Electricity Sold (kWh)



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Distribution losses in the industry are above acceptable levels in the majority of municipalities



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Distribution Loss Trend 2007 - 2008





37.50%

Brazilian Equivalent of LV Distribution Losses

Non technical loss 35.00% Technical loss 32.50% 30.00% 27.50% 25.00% 22.50% 20.00% 17.50% 15.00% 12.50% 10.00% 7.50% 5.00% 2.50% 0.00% MEAN N.

Copied from: C I R E D 20th International Conference on Electricity Distribution, June 2009 from paper: **EVALUATION OF TECHNICAL LOSSES ESTIMATION IN LV POWER DISTRIBUTION SYSTEMS by** Leonardo QUEIROZ of ANEEL – Brazil, Celso CAVELLUCCI of UNICAMP – Brazil and Christiano LYRA of UNICAMP – Brazil



Chilean Total Losses Reduction





Copied from THE ELECTRIC MARKET RESTRUCTURING IN SOUTH AMERICA: SUCCESSES AND FAILURES ON MARKET DESIGN, by Hugh Rudnick Pontificia Universidad Católica de Chile



- Distribution losses are above acceptable levels in the majority of municipalities
- 12 out of 34 (35%) ringfenced municipalities showed a distribution loss of less than the benchmark of 10%
- Average annual distribution loss (Technical + Non-Technical), ≈ 14.55% (4.55% above the acceptable limit of 10%)
- Ringfenced Municipalities above benchmark of 10% losses had a combined annual loss of 292 GWh = R130 million (2007/08 tariffs) (ie unacceptable losses)
- *Extrapolated* to all of the 181 distributing municipalities, a loss of 1 450 GWh is
 <u>estimated</u> = R 655 million of annual unacceptable losses (2007/08 tariffs)





RINGFENCING INSIGHT CONCLUSIONS



Ringfencing Insights Conclusion



- Based on the further analyses done to date the following key observations are still very valid:
 - The pockets of good performance are on the decrease
 - There is an urgent need for effective and integrated business management
 - The technical and non technical losses calls for management focus
 - Debtor Days management and processes must be addressed
- Municipalities need urgent assistance
 - More than 50% of the municipalities that participated in these ringfencing projects are rendering results that indicate large room for improvement
 - The position that these municipalities find themselves in, forces them to raise tariffs, limit maintenance & refurbishment, reduce capital expenditure in order to limit expenditure as a result of the escalating costs
 - Very often such a municipality does not have the capability to rectify this problem from own resources
 - SARPA well placed to render assistance to these municipalities





Questions?







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THANK YOU



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